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Crime detection laboratories
Seminar
No. 4. Examination of questioned documents. 1956.

ROYAL CANADIAN MOUNTED
POLICE

CRIME DETECTION LABORATORIES

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THE EXAMINATION OF QUESTIONED DOCUMENTS

Headquarters, Ottawa May 10 and 11, 1956

Price $3.

82384—1

FOREWORD

It is with pleasure that I again provide a foreword to the record of another seminar held in the Crime Detection Laboratories of the Force.

While this constituted our fourth such seminar, it was the first pertaining to the examination of questioned documents. I only hope the widespread interest in this meeting and the enthusiasm shown by its participants will accelerate the wealth of work which there is to do in this field, and result in more frequent and closer associations of document examiners from different points.

This record and the success of the seminar represents much work on the part of many. May I again express to all who contributed to, or participated in the meeting, my appreciation for their efforts.

L. H. NICHOLSON,
Commissioner.

Royal Canadian Mounted Police,
Ottawa, Ontario.
10th September 1956.

82384—1½

ATTENDANTS

Mr. G. W. K. Brohier, Government Analyst's Department, Colombo, Ceylon.
Cst. D. N. Brown, Crime Detection Laboratory, R.C.M.P., Ottawa, Ontario.
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Supt. J. A. Churchman, Crime Detection Laboratory, R.C.M.P., Ottawa, Ontario.
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Mr. W. F. Marshall, London, Ontario (London City Police).
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Mr. A. J. Park, Hamilton, Ontario.
Miss J. Proudman, Fraudulent Cheque Section, R.C.M.P., Ottawa, Ontario.
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Mr. R. F. Rodgers, Crime Detection Laboratory, R.C.M.P., Ottawa, Ontario.
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Mr. J. Tholl, Cleveland, Ohio (Cleveland City Police).
Miss H. Thompson, Fraudulent Cheque Section, R.C.M.P., Ottawa, Ontario.
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Cst. A. F. Wrenshall, Fraudulent Cheque Section, R.C.M.P., Ottawa, Ontario.
Cst. A. Zitzelsberger, Crime Detection Laboratory, R.C.M.P., Regina, Saskatchewan

FRONT ROW: *left to right;* Lt. D. J. Furtell, Mr. D. B. Doud, Dr. F. M. Miller, Mr. H. J. Walter, Supt. J. A. Churchman, Mr. A. J. Park, Mr. W. F. Marshall, Mr. J. Tholl, Sgt. E. C. Schroeder

SECOND ROW: Sgt. R. A. Huber, Cst. A. F. Wrenshall, Cpl. C. C. Head, Miss J. Proudman, Mrs. H. H. Storie, Lt. S. S. Smith, Supt. H. L. Leggett, Mr. R. F. Rodgers, Sgt. A. F. Wilcox, Sgt. N. W. Duxbury

THIRD ROW: Cst. D. M. Duke, Miss H. Thompson, Mr. G. W. K. Brohier, Dr. B. B. Coldwell, Cst. J. W. Warren

BACK ROW: Cst. A. Zitzelsberger, Cst. W. J. T. Rankin, Cpl. A. M. Headrick, Cpl. J. A. G. de la Durantaye, Cst. J. H. Hodgins, Cst. J. F. Fay, Cst. D. N. Brown, S/Sgt. C. R. Eves

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Official Welcome by Commissioner L. H. Nicholson

Ladies and Gentlemen, I am very pleased to come here this morning and, without becoming involved in the scientific part of your discussions, wish you well in this Fourth Seminar which is to deal with your particular subject and which is the first one to be held in Ottawa.

I think the other Seminars, it is fair for me to say, have been a complete success—and I say that without boasting—but I think it is correct that we have gained much from the other groups which have been brought together to discuss problems in much the same way as you will be discussing your particular field here during the next two or three days.

It was a bit of an operation to undertake these things, to organize them and try and profit from them; but I am sure it has been worthwhile and this is just another step in the progress of working together in the development of the studies in the sciences so that full help may be given in criminal investigations.

I particularly welcome our friends who have come up here from the United States. It is nice that so many were able to come along and join with us. I am sure we will gain much from your attendance and hope that we will be able to give you a little bit to take back. We are also pleased that others from Canada have been able to sit in with us and round out the party.

Those of us who have to do, not with the actual Laboratory work but with the administration of the Laboratory, have a particular problem in deciding how far the thing should spread—what fields it should take in and do so without danger of overlapping and duplication; what should we leave to Laboratories that are already set up and operating—in Universities, in Hospitals and in Industry? What should we concentrate on within our own walls and how may we limit this thing without hampering the people left to do the job, because as you well know one particular field moves over into another. It is impossible to draw a hard and fast line. That is a problem that we face when we set out to try and organize and control Laboratories, and administer them.

We have problems in respect to some particular things; we have very little problem in that respect concerning the science that you people here are going to discuss because it seems that handwriting, its related aspects and features is a thing that is pretty well left to those of us who are concerned with the forensic aspect. Ballistics is another field where we find little conflict and pretty well free for us to go on without any real danger of duplication or improper overlapping.

Just thinking about the work that you will be going over in the next two or three days—the things you will be discussing—it occurs to me how very much the science—this science has developed over the past, say two or three decades. Some of you here will remember, I am sure, when the handwriting expert was a fellow looked upon as a rather fanciful chap that moved from nice flowing lines to prophecies—something of a soothsayer—and was looked upon by practical people as, well, certainly unusual, interesting—but where did he stand in respect to hard and fast sciences and findings? We have moved a long, long way since that and it seems to me that a great

deal of progress has been made over the past twenty or thirty years because now we have found something that is scientific and I am sure that many here have contributed a great deal to this progress and its growth.

The days when the handwriting expert, as he was called, gave evidence—almost entirely opinion—are long past. One thing you are to be congratulated for is the manner in which the presentation of your evidence has been broken down and perfected.

Now I must not get into these things too deeply because I am not qualified to talk in the profession like others—I have seen some of the effects and years ago some of the problems. I am sure, coming together like this, you will not only progress with some new ideas but you will probably bring up old ones that have been put aside or perhaps forgotten or overlooked and different techniques that have been developed in different places will be revised and improved upon. This is the sort of thing I think we must expect from a Seminar such as this. I think it would be wrong for us to look to brilliant developments, something entirely new or startling—I believe the history of this sort of thing shows that what is really secured and capitalized upon is modest and progressional—something that perhaps to outsiders does not seem terribly important but to those of you who are working with it, it means something; a little point which is improved upon professionally, a particular type of technique that one Laboratory, one Scientist, one Technician has moved ahead and by coming together here and proving these things, that is where value lies. I am pleased to be here this morning to open your studies. I wish you well and welcome you here on behalf of the Force. It is a pleasure for us to act as hosts and I hope that your work in the next two or three days will be very useful. I also look forward to the opportunity of meeting and chatting with you another time while you are here.

Opening Remarks by Superintendent J. A. Churchman

The programme ahead of us, particularly for this morning, is a full one so I will be very brief.

The Commissioner has remarked that this is our Fourth Seminar—the first three were held in Regina and the first two dealt with Toxicological problems, the third with problems in the Serology field. We are now opening this fourth meeting to deal with matters pertaining to document examinations.

Not all of the material to be presented here will be, or is intended to be, conclusive. Some has been deliberately prepared to be thought provoking and we hope that each of you will give voice to his thoughts when he feels so inclined.

To persons new to the field, this Seminar is intended to form a part of their training; to those with some experience it will be an opportunity for further study and to those with many years behind them it may constitute a short refresher course.

As we plan to produce a record of the proceedings, I will ask you to leave a copy of your papers with our Secretary. The discussions will be recorded, either by shorthand or on a tape recorder. The work will be facilitated if, when entering the discussion, you will preface your remarks with your name. The record will be printed as soon as the material is assembled and copies will be made available for participants.

If there is anything we have overlooked or anything we can do to help you individually or after the proceedings, please let us know.

I do not think I can say anything more at present so I will ask Sergeant Huber to take the chair and lead the discussions.

82384—2½

Unusual Cases in Document Examination

BY

Dr. FRED M. MILLER

F.B.I.

Washington, D.C.

Mr. Chairman, Superintendent Churchman, Members and Friends, it is indeed a pleasure for me to appear before you as a representative of the Federal Bureau of Investigation and to bring you greetings. The history of the F.B.I. Laboratory, its humble beginning and its rapid expansion into one of the finest scientific crime detection laboratories in the world, is undoubtedly one of the most brilliant chapters in the history of law enforcement in America.

Director J. Edgar Hoover was an outstanding pioneer in the field of scientific crime detection. He realized that most scientific techniques and their application to the examination of physical evidence were outside the field of most law enforcement officers, but he was of the conviction that this technical assistance could be had. He advanced the theory that physical evidence, recovered at scenes of crimes, could become the most valuable evidence in a court of law when properly interpreted by a highly qualified expert witness.

In the early 1920's very little use was made in the United States of science in law enforcement. Although such sciences as physics and chemistry were widely taught in our colleges and universities, police officers did not realize the importance which science could play in assisting them in their daily investigative problems. To a modest degree, science was coming into use in some European countries, but even there progress was slow and tedious.

In the late 1920's the F.B.I. occasionally called on a scientist connected with a high school or college to perform a scientific examination, as for instance in a posioning case, but most of these men had neither the facilities nor the training to intelligently present such evidence before a court and jury. Although the findings were fairly satisfactory, this procedure left much to be desired. Frequently the scientist was not available to testify when his presence was needed. In other instances the custody of the evidence and the fee involved introduced new problems. In still other instances the confidential nature of the case had to be considered.

In those early days the courts were often wary of the use of science from the witness stand largely because of the clumsy and awkward way in which such technical evidence was presented. More disturbing, however, was the fact that many who professed to be experts had little more than ordinary knowledge of the field in which they ventured to operate.

Mr. Hoover continued to watch closely the development of science in law enforcement. Early in the 1930's he launched a program in the field for sources of information and scientists whose knowledge and experience might be used in the building and staffing of a new laboratory. Leading authorities in various colleges and universities as well as those in industrial laboratories were consulted.

Establishment of F.B.I. Laboratory

The early days of the new laboratory were so colourless and uneventful that it was difficult to point to a precise date or event marking its establishment. In fact it was not until a few years later that the events were reviewed and November 24, 1932, was officially designated as the date of its establishment.

The collection of assorted scientific equipment in itself was far from being a real laboratory. There followed the immense task of staffing the new laboratory and training its personnel. Of equal importance was the huge task of educating our own investigative personnel and law enforcement officers in general to the potential value of teaming the scientific detection of crime with their established investigative efforts.

Slowly but surely the work of organizing the new laboratory continued, but it was not until August, 1933, that the active examination of evidence in current cases was begun. During that first month this new laboratory handled 20 cases. Thirty cases were handled in September and 35 in October. By the end of the fiscal year ending June 30, 1934, the new laboratory had handled 963 cases.

In the early months during which the new laboratory undertook the examination of evidence in current cases, the preponderance of the cases related to some phase of document examination. For example, in the fiscal year ending June 30, 1935, 2,337 examinations were made. Of this number, 2,028 related to document evidence. Of the remaining 309 examinations, 165 were made on firearms evidence and 144 examinations covered a variety of scientific fields.

Volume of Work

During the twelve-month period ending June 30, 1956, the F.B.I. Laboratory will have made a total of more than 140,000 examinations. Of this number, 91,000 concern various scientific examinations of document evidence. The remaining 49,000 examinations concern microscopical examinations of firearms, toolmarks, hairs and fibres, spectrographic and spectrophotometric analyses, petrographic studies of soils and related materials, biochemical and biological examinations, and a wide range of scientific fields not included in the major categories listed above.

Qualifications of F.B.I. Experts

The scientists on the the staff of the F.B.I. Laboratory received their basic training in various colleges and universities throughout the country. They all hold at least one degree and many hold advanced degrees in chemistry, physics, mathematics, or one of the other physical or biological sciences. Nevertheless, it is necessary that they receive further training of a highly specialized nature upon their assignment to the F.B.I. Laboratory. Upon arrival in Weshington, these men must pursue the same rigorous training program afforded all other Special Agents in the field. They must meet the same high physical standards and their background is investigated thoroughly prior to appointment. In addition, they receive extensive training in the Laboratory in the particular field to which they are assigned.

The scientists find their work quite varied in their own specialized branch. Problems requiring a great deal of ingenuity and resourcefulness are constantly arising which require the utmost from their knowledge and experience.

In addition to making examinations and testifying in court, Special Agents assigned to the F.B.I. Laboratory must conduct research and give lectures and instructions to police agencies and other groups receiving specialized training. In many major cases investigated by the F.B.I., experts from the F.B.I. Laboratory are dispatched to the scene of the crime to conduct interviews and to supervise the technical aspects of the investigation.

Document Examination

Basic Types of Examinations

Document examination is commonly associated with examinations of handwriting, hand printing, typewriting, forgeries, and other closely related matters. The most common type of examination consists of a side-by-side comparison of questioned evidence with known standards for the purpose of establishing the identity of the writer.

Great Progress in Recent Years

Expert testimony based on handwriting analysis is now an approved and often essential part of a trial procedure. However, conditions have not always been so favourable for this phase of crime detection. Only a few years ago restrictions in many courts limited the scope and effectiveness for the adequate presentation of handwriting testimony. Today the properly trained and highly qualified expert in document examination is accepted in every court of law in the United States as an essential witness in many types of cases.

This change has been brought about primarily by the great progress made in the scientific study and analysis of handwriting during the past few years. Largely responsible have been the experts themselves whose scientific skill and personal integrity are reflected in the accomplishments in the laboratory and from the witness stand alike.

Basis for Conclusions

Based on the examination of the handwriting of an untold number of people by many highly trained experts over a span of many years, it has been observed that no two people write exactly alike. There may be a superficial resemblance in the writings of two or more persons resulting from training in the same style of penmanship, but the writing operation is so complex that individual peculiarities make their appearance which are characteristic for each individual. Detailed examination will disclose these hidden, individual characteristics which form the basis for a scientific opinion. As a result, this type of testimony has attained the stature of an exact science.

Importance of Thorough Training

Contrary to popular opinion, skill in the identification of handwriting is a science very difficult to achieve. In order to become proficient it is necessary to undergo a long and thorough period of training. This includes as a most important element the actual handling of current cases. Before an apprentice document examiner assigned to the F.B.I. Laboratory is permitted to testify in court he is required to make thousands of examinations under the immediate supervision of experienced experts. If his progress is satisfactory, he is then permitted to make examinations on his own responsibility.

Diversity of Work

In addition to examinations of handwriting, hand printing and forgeries, document examination also includes typewriting, paper, inks, pencils, the true age of a document, printing and other duplicating processes, indented writing, obliterated or eradicated writing, ultraviolet and infrared photography, used carbon paper, burned or charred paper, rubber stamps, chequewriter and other embossed impressions, and a variety of related and associated matters.

The National Fraudulent Cheque File

The National Fraudulent Cheque File was initiated in 1936, but it was not until 1941 that it became a major operation. Today this file is without a doubt one of the most valuable and effective tools which has yet been placed in the hands of scientific law enforcement.

During the fiscal year ending June 30, 1955, the F.B.I. Laboratory received 23,569 fraudulent cheques having a face value of $3,379,966. About 30 per cent of these were identified as being the work of a known individual by comparison with signatures on criminal fingerprint cards on file in the Identification Division. Another 30 per cent of these were identified with questioned material already in the file. Although in the latter instance the true identity of the subject may not be known, his method of operation, his description, and the area where he has been operating may be helpful in securing his apprehension.

In the remaining cases, where nothing of value is found as a result of a search, a record is made and the submitting agency is subsequently informed if anything of value is brought to light at a later date. As soon as the subject is apprehended, all agencies interested in the matter are immediately advised.

Cheque File Machinery

The most important cog in the cheque file machinery is the comparison with signatures on criminal fingerprint cards. If such an identification is made, the submitting agency is advised of the identity of the subject, a physical description and a transcript of his identification record are furnished, and other background information is supplied.

A second important cog is the signature section of the National Fraudulent Cheque File. This is made up of photographs of all the various names which have appeared on all questioned cheques previously received. Arranged alphabetically, this portion of the file is extremely easy to search.

The so-called "recognition" phase of this machinery constitutes perhaps the least scientific cog, yet one of the most important and efficient. A staff of experienced technicians inspects every cheque received, and immediately spots the handiwork of an old cheque passer who may have changed his aliases but not the way he makes out his cheques. The same old composition and form often appear time after time.

The last cog is the so-called Master Section of the cheque file. This is made up of photographs of the entire cheque. Since no satisfactory method has yet been found for the classification of handwriting, a search of this section is time-consuming and tedious, and is considered only in the most unusual cases. Those cheques made out on a chequewriter or on a typewriter are easily classified on that basis. Travellers cheques, too, are easy to classify. However, those cheques which are made out completely in handwriting must be searched through the major portion of this file.

Importance of Cheque Investigations

There are some who say thoughtlessly that the passing of a fraudulent cheque is a minor violation involving only a small amount of funds, and that anyone who is stupid enough to cash a worthless cheque for a stranger should suffer the consequences.

They fail to realize, however, that once the cheque passer has tasted the fruits of his deception and fraud, he has only begun to prey on the public; neither do they realize what it means to receive a complaint from an irate citizen who has been the victim of a cunning swindler.

The records show time and again that the person who passes fraudulent cheques has committed other crimes before. Usually he has stolen automobiles, burglarized stores and offices, cheated and bluffed his way most of the time. He is a liability to society whether in prison or out, and utilizes his prison terms pondering over his mistakes and dreaming up new and better schemes to swindle the public when he gets out again.

Unusual Cases

The F.B.I. Laboratory makes scientific examinations of physical evidence wherever needed in all cases investigated by the F.B.I. in its far-flung operations. In addition, it also makes examinations without cost for all local law enforcement agencies in the United States in connection with their investigations of criminal matters. It has been said that the F.B.I. Laboratory plays some part in nearly every major case investigated by the F.B.I. and in many major cases investigated by other law enforcement agencies.

Slides

The following slides illustrate some of the more unusual cases handled in the Document Section of the F.B.I. Laboratory:

1. This shows two different bank robbery notes. The first was used in holding up a bank in Detroit. A photograph was made and placed in the bank robbery section of the Anonymous Letter File. A few months later another bank was held up, this time in Des Moines. The second note was identified with the first through this file. Shortly thereafter the subject was apprehended and later convicted for both bank robberies.

2. This is Frederick Douglas George, one of the cleverest cheque passers. He operated for a period of about 26 months during which time he desposited cheques having a face value of approximately $1,000,000. He realized about $100.000 of this amount in actual cash. He was apprehended and pleaded guilty to the charges. He is now serving a lengthy prison sentence.

3. This shows the travels of Frederick Douglas George, conservatively estimated at 110,000 miles. Most of this was done by plane.

4. This is Frederick Emerson Peters, another clever cheque passer and confidence man. His cheques were very simple in appearance. He depended almost entirely on his smooth talk to get his victims to cash his cheques. He often impersonated business and professional men and high government officials. Note the consistency in style of his cheques although he frequently changed aliases.

5. This shows the work of two cheque passers who impersonated clergymen. The handwriting and embossed seal were identified on many of these cheques.

6. This is a laundry tag submitted to us by a Western police department. It was found on a skeleton, but the name could not be determined. Infrared photography disclosed the name which led to a positive identification.

7. This case involves the receipt of threatening letters by a number of prominent jockeys. A photograph of the first letter was placed in the Anonymous Letter File. Subsequent letters were identified with the first to establish that they were all prepared by the same person. When the subject was apprehended he admitted writing them all.

8. This is a threatening letter received by Rocky Marciano, the heavyweight boxing champion. This shows the importance of obtaining hand printing samples of the manner in which the suspect addresses an envelope.

9. Certain items were fraudulently inserted into this page of typewriting after the certifying officers had approved the destruction of a quantity of military payment certificates. Improper alignment of the typewriting disclosed that larger items were added later and unlawfully converted to the private use of the subject.

10. This shows a bill of sale for an automobile when photographed in the ordinary manner. When photographed with the use of ultaviolet light it was found that certain handwriting had been eradicated and the original writing could be determined.

11. This also shows how certain securities were identified through the use of infrared photography as being part of the loot in a bank robbery.

12. This shows how infrared photography was used to restore to legibility certain writing on charred fragments of paper, thereby proving his connection with bookmaking activities.

13. This shows how used paper matches found in the ash tray of a stolen automobile were identified as having originated from a book of paper matches found in the possession of a suspect.

14. Typewriting identifications established fraud in the largest income tax evasion case in the history of the U.S. The typewriting on numerous documents purportedly originating from Cuba were found to have been prepared on machines located in Baltimore and New York.

15. These cheques were made out completely by hand, except the typewriting. In one of them even the safety paper design was made by hand.

16. This cheque was raised from $5 to $100. Ultraviolet light disclosed that the original writing had been eradicated.

17. X-mark indentations on ballots were found to establish irregularities by precinct officials at the polls. Other X-marks were made to cancel the choices by the legitimate voters.

18. The signatures on fraudulent cheques are often compared with signatures on criminal fingerprint cards to identify the writer. If such an identification is made, the contributor is furnished with a photograph, a physical description, a transcript of his identification record, and any background information which might be of value.

Discussion of Dr. Miller's Paper

Lt. PURTELL: You showed the photograph of two cheques made by hand dated 1949. I have one of them given to me as a gift by one of the banks in Chicago dated 1933. It is the same operator.

Dr. MILLER: He wrote a number of cheques—this work is only a representation of the work that he did. The fact that you would have such a cheque dated back to 1933 is very interesting. I don't know what the history or the background of the case is other than what I have explained to you. It is very likely that a person like that is just like every other cheque operator; he keeps on going because he knows nothing else to do.

Cst. DUKE: Dr. Miller, you mentioned that when a man reached a certain specific age you would consider him no longer criminally active for the purposes of cheque passing—I am just curious as to what that age might be.

Dr. MILLER: That is a good question but I am not real sure of the correct answer but I think it is seventy years. I was going to tell you of a bank robbery case down in Miami where a seventy-two year old man got away with

$25,000 in a bank robbery hold-up. The man who held up two banks—one in Detroit and one in Des Moines—was sixty-eight years old. So it is a little bit dangerous to presume that a man is out of business when he reaches the seventy mark. We have to play the percentages to a certain degree—everybody does—and that is one reason why we withdraw fingerprint cards of people of a certain age because we can presume them to be dead or at least out of circulation.

Cst. HODGINS: You spoke, Dr. Miller, of the question of standards—particularly typewriting standards and cheque protector standards—just how far does your Laboratory go in the collection of an all inclusive collection of other standards—let us say papers, writing instruments, inks, etc.

Dr. MILLER: Oh, yes, we have a number of other collections. We don't have any samples of papers and I think you are talking of water marks. In our early history we attempted to get together standards of different water marks of different makers and we found it was a question we just simply could not handle. Not only that, but the water mark owners changed their individual designs so much that to keep up would have been a hopeless task. We just keep a 3″ x 5″ index card for the different brands, and kinds of water marks.

Cst. HODGINS: We are finding the scourge of our existence nowadays to be ball point pens. Do you undertake a full scale collection of these?

Dr. MILLER: We have a number of ball point pens but no whole collection —just enough to give a working knowledge of how they operate and the different solutions. We are making no effort to make a complete collection. They change those, too, from time to time—composition of inks, etc.,—and we found it to be a hopeless task.

Cst. BROWN: Do you make individual positive identifications on photostatic copies of questioned material?

Dr. MILLER: In a few types of cases. Generally we make a routine check on the basis of photostats. We also make positive identifications but the photographs must be good, realizing that a photostat is a facsimile and is never made for document examination. It is good to have as a record but when it comes to making actual identification you have to be very careful about that. We do make them but not very many.

Lt. SMITH: You refer to the fact that there are no successful systems of classification of types of handwriting and I presume the truth of it is that you have had considerable experience with this and I would like you to briefly survey your experience in that line.

Dr. MILLER: I know that is a subject—the classification of handwriting—with which certain people will disagree with me. I was out in San Francisco two weeks ago and gave a talk to the Check Investigators Association out there. They tell me that they can classify cheques. We find that other places can classify cheques and quite successfully. In most of those places the number of employees they have may be limited. We have in our Laboratory twenty-seven Special Agents assigned to Document work; of those twenty-seven, twenty-three are actively engaged in making these examinations. In addition to that, we have twenty odd technicians. We have about fifty people who would have to be able to classify handwriting the same way to make it actually worthwhile. We found that so long as you can keep your number of employees down certain systems can be made to work. When we were small we were able to successfully classify handwriting within the Anonymous Letter file, within the National Fraudulent Cheque file to a certain degree, but as we grew bigger we simply had to dispense with it. We have classifications now of all of our handwriting standard files but they are not according to peculiarities

in handwriting—they are a sort of arbitrary classification that we automatically adopted for searching purposes only. I am not ready to quarrel with anybody who says that they have a system of classifying handwriting—that can happen; and I know, for instance, in Milwaukee the man in the Bureau there has a very good system of classifying handwriting; but he hasn't fifty employees searching that file and therein, I think, lies the real difference. Now we are doing this on a mass production basis; we know that we are not getting 100 per cent results but we feel that we are getting such a high percentage for the amount of work that we put into it that we think our system is a good one and a practical one. As you all know, if you want to increase your efficiency, you certainly soon reach a point of diminishing returns and we are trying to give the taxpayer a good day's work for his money without going too far. In cheques, the classification is unusually difficult because you have so many different names and a limited amount of writing. You have certain circumstances that are always there like the sums and the amounts. For a long time we had a file which we called the "Sum and Amounts" file and it worked pretty well but as we got down to the volume of work we now have we had to abandon it.

Cst. WRENSHALL: Dr. Miller, you mention making identifications in the Fraudulent Cheque file by comparing with signatures on fingerprint cards. Are you able to take those identifications into Court?

Dr. MILLER: We can take those identifications into Court provided that we have the witnessing officer identify the signature, the person who saw him write the signature. Often times we cannot call it a fingerprint card—we call it a document; often times the whole document has to be masked out to show the signature only and there are quite a lot of limitations; but if we can produce the officer who saw him write it we have a very excellent chance of using it and nearly always do. In fact there are no exceptions.

Expert Evidence—The Standpoint of the Law

BY

S/Sgt. H. S. GRAVES
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Good morning, Ladies and Gentlemen, it is indeed an honour and pleasure to be permitted to speak to you on some aspects of our legal system. I certainly do not pretend to be an expert in the subject though I have had field experience and also my work at this Training School keeps me in contact with this material.

As a policeman in the field or as an expert, we will have to come to some conclusions as to what is evidence, what value it will have, will it assist in solving our case, will it be of value to the defence. Always remembering that we must be impartial. There is a tendency on our part to call upon the Laboratory to solve our case for us, where as it can only be solved in the field. Also there is a tendency at times to submit too much expert material and not enough in the way of facts. The Chief Justice of Canada in 1938 made the following comment in a case before the Supreme Court. "A criminal case is an action between his Majesty the King and one of his subjects. It is not a scientific investigation. It is a determination of the facts in issue."

What are the facts in issue. They are simply those things that the accused pleads innocent or guilty to and are found in the indictment or charge. The facts in issue are the prohibited actions which the accused is alleged to have done on a certain date and at a certain place. Before the case for the Crown is complete these facts in issue must be proven beyond a reasonable doubt.

There are three ways generally speaking that we prove the facts in issue:

(1) Judicial Notice. This form of proof is permitted by Statute and allows the courts to recognize certain public documents, statutes without further proof. A little while ago somebody brought up the point concerning judicial notice of fingerprint forms. Our courts do not judicially note these forms.

(2) Presumptions, for example the law recognizes the fact that a child under seven years of age is not mentally capable of forming the evil intention necessary to commit a crime, therefore the child can not be found guilty of the prohibited action.

(3) The third way that a fact is proved in court is by evidence, which may be oral testimony, a real object such as a gun, documentary where we are interested in contents of the document as distinct from the document being an object, and opinion evidence as given by experts based on their examination of an object.

What is evidence? Phipson in his Eighth Edition states that evidence is the proof of any fact in issue that is admissible in court irrespective of mere argument. He goes on to say evidence is the knowledge that we gain through our senses, that is our eyes, ears, nose and so on. Generally this is the only evidence admitted by the court.

Under ordinary circumstances we have two categories of witnesses. The average person who tells his story through the knowledge that he has directly gained and the expert witness who because of his training and experience can be of assistance to the court.

Oral testimony given by a witness is under oath. The judge decides whether it is admissible and the Jury then weighs the evidence. It may be direct evidence, that is knowledge that the witness obtained through his eyes concerning the fact in issue or it may be circumstantial evidence, that is, requiring an inference to be drawn by the jury, from the fact as stated by the witness. Notice it is the jury who comes to the conclusion on circumstantial evidence.

An expert witness has made an analysis of a sample of blood and has found a certain percentage of alcohol in the sample. He can state that as a fact. But ordinarily he must not usurp the function of the jury and come to the conclusion that the accused was intoxicated.

The ordinary witness in giving testimony is subject to many human faults. There are several dangers in his evidence. He may lie, he may be biased as far as the accused is concerned, his senses may have misled him that is faulty perception, he may have misinterpreted the facts that his sensse gave him, he may unconsciously overemphasize certain points, and finally there is always the danger of the jury coming to a wrong conclusion. You as an expert witness create these dangers in your evidence, as well as the ordinary witness. In addition you will create additional dangers in your evidence. In many of your scientific processes you will use the finest of instruments to find these facts. But the courts feel that these instruments can make a mistake as well as the human element. Also in coming to your conclusion you can be mistaken. Please do not think that I am being critical. Personally I know how extremely fair and impartial you are in chosen fields of endeavour. It simply means that these dangers are present and the courts recognize that fact.

Let me give a simple example of the problem facing you as an expert. There is a gunny sack or bag filled with some material. The ordinary witness examines it, he uses a sieve and separates the material into three piles, one which he knows is coal, another samples of gravel and the third some sand. In a court case he gives evidence of his findings. Because it is an everyday occurence in our lives it is admissible as evidence against the accused. You as the expert do the identical examination but with far finer instruments and come to the same conclusion. Unfortunately you are considered an expert and therefore your evidence may not be used though it is admitted. Another way of saying it is that a witness is called to give evidence from his memory and not for his power of judgment. You, as expert witnesses, are called for your judgment, your reasoning ability.

Another example which occurred in Ontario might help to clarify the situation. If the mental capacity of a testator were an issue, his closest friends could be called and state what they know about his mental condition. On the other hand his physician would be considered an expert because his deductions are based upon his observations of the patient and on his study of mental diseases.

In another case in Eastern Canada a Doctor was called for the prosecution. He stated he was not an expert in psychiatry but from his knowledge as an ordinary citizen the man was insane. The Doctor gave expert evidence as to the distance a bullet had been fired from the body. Under cross-examination he explained how he had studied various text books on this subject. His evidence in both these cases was ruled admissible. On appeal this ruling was upheld.

Under the Canada Evidence Act we are only permitted to call five expert witnesses, unless we get the permission of the court. This can cause embarrassment to us when we have called our five experts and have called a further witness such as a carpenter who has been in this type of business for many years. He states as a fact his knowledge of a fact in issue and inadvertently (remember he is an expert as far as carpentry is concerned) he is questioned as to his expert knowledge. This has led to a new trial.

The question of x-ray photographs has been brought up, as to admissibility in court. Our Courts have a rule that is followed very carefully. Only primary evidence is admissible unless we can prove the original has been destroyed, has been lost, can not be obtained because it is in the hand of the accused. In that case secondary evidence might be admissible. However it never has the weight that primary evidence would have. Where a Doctor uses the x-ray photograph simply to explain why he came to his conclusions, most courts will not object to this procedure.

A case that occurred recently in Quebec and was appealed to the Supreme Court of Canada is of interest as far as the expert witness is concerned. It dealt with blood tests of a suspect drunk. A sample was taken from the accused without his consent and also no police warning was given as to the results of the analysis to be performed. It was appealed as to the warning. The Supreme Court ruled a lack of warning would have no effect on the quantity of alcohol found in the body of the accused. Therefore the expert's evidence was admissible but they did not say that the expert could usurp the function of the jury as to the accused being intoxicated.

Another point that must be remembered. The accused is innocent until proven guilty and also the Crown must prove their case beyond a reasonable doubt. Where a case is purely circumstantial and is based primarily on expert evidence all the accused has to accomplish is to raise a possible doubt about a single fact in issue. Our courts will dismiss under these circumstances. The man in the field must find the material based on the facts in issue. Then with the assistance of the technician, even if the case is circumstantial, it should prove to be successful.

Discussion of S/Sgt. Graves' Paper

S/Sgt. Eves: Whose prerogative is it to determine whether or not a witness qualifies as an expert witness?

S/Sgt. Graves: The Judge. You go to the witness box and say "I have been examining documents for ten years" and if you are not cross-examined, it is too bad for the defence. The Judge accepts that statement as you are under oath. Now, if they don't want to cross-examine you it shows that maybe your knowledge is excellent and you are recognized as an expert.

S/Sgt. Eves: Is it correct for a witness, himself, to state that he is an expert?

S/Sgt. Graves: He should be asked what his qualifications are and, again, let me emphasize you do not have to prove what your qualifications are—by proof of college degrees, university degrees, from books—you can prove it simply by fifteen, five or ten years experience and having given evidence. You are the one person who can do that yourself. It is up to the Judge to decide whether you have qualified in that sense of the word that you are an expert. If there is no cross-examination; you made that statement; the Judge says go ahead. It is too bad for the defence—you are an "expert".

Mr. WALTER: In the States they give a very broad interpretation of a handwriting expert. They shouldn't in some cases.

S/Sgt. GRAVES: Well, as a matter of fact—another member here will be giving a talk on this subject—who are handwriting experts and who are not—it varies a lot here in Canada. Do you know Dr. Davenport? I believe he is from the United States and wrote an article on Handwriting. He lists some of the following axioms and we follow them in Canada. He goes on to say that if a person writes long enough he will form voluntary habits etc., some of these habits are common with other writers; others are uncommon, depending on the individual, and he goes on to say that many are voluntary and conscious ones and subject to the will. The ones that are not subject to the will can only be changed. Now I have seen Sgt. Huber write letters on many occasions. I can testify to the court that I recognize Sgt. Huber's handwriting. I am not an expert but I am certainly able to give evidence. I can give an opinion that this document was written by Sgt. Huber. Why? I am his business associate: he gives me cheques; I am his grocer and he buys food from me.

Mr. WALTER: I would say you are qualified as an expert on his handwriting.

S/Sgt. GRAVES: Yes, in that sense, although we are quite broad here in Canada.

Mr. WALTER: How about someone seeing a person write once many years ago and getting on and giving, in fact, testimony of his handwriting. That is pretty far fetched, isn't it?

S/Sgt. GRAVES: It is far fetched but it has happened—it has happened in Canada; but the point is that it is entirely up to the defence to cross-examine him and disprove his qualifications thus weakening the weight of the evidence. It only goes to the weight the Jury should give to that statement.

Mr. WALTER: How about the so-called fact testimony of alleged eye witnesses—two witnesses to a will—they go on to say—"I saw him sign it". They were both in the room and they both stick to the story. You just can't do that. You know they are not telling the truth. You go on and prove that the signature is as rough as it can be; anyone can see that it is but it does not overcome the so-called fact testimony of these two eye witnesses.

S/Sgt. GRAVES: Any person who can state as a fact—something that he knows in any case which is relevant to one of the facts in issue—as far as we are concerned—is admissible evidence in our courts. Then the next thing it is up to the Jury to say well, now, I think he is lying or I think his qualifications are so weak it is not possible to identify that handwriting but there is no other way to get around the issue.

Mr. WALTER: But you do have a case in Canada here where the so called eye witnesses are overruled by expert testimony.

S/Sgt. GRAVES: That is possible. Yes.

Mr. WALTER: Although they really weren't impeached.

S/Sgt. GRAVES: How could you prove that those two witnesses were perjuring themselves or anything else? In other words, it just went to the weight of the evidence that the Jury accept it.

Mr. WALTER: Finally the Judge did not believe them. He wanted to take them back to Detroit rather than indict them but, of course, he couldn't do that. It was an extraordinary thing, though. The cross-examiner said afterwards "Walter, if those two witnesses' testimony stands up we have lost our case"—but we went back for rebuttal and disapproved it.

Mr. MARSHALL: Were the witnesses there?

Mr. WALTER: Yes, each one was cross-examined for nearly a day.

Dr. MILLER: I have a couple of observations regarding the photostat problem that came up a little while ago. Maybe I didn't clarify the situation thoroughly but we would have to have the original evidence in court—just as you say, S/Sgt. Graves—we could make the examinations but the expert could examine the photostat and the original.

S/Sgt. GRAVES: I have here as a matter of fact photographs on ruled paper of known and questioned signatures that we successfully employed—but, of course, they had the original documents.

Dr. MILLER: Yes, that is right. Another observation I wanted to mention—and I am sure the gentlemen from the States will bear me out—we frequently in the Laboratory have a request for testimony where there is handwriting alone in our Federal cases where the F.B.I. just makes the investigation. We review the file, find that there is only handwriting testimony and we tell them to get out and get a little more evidence and often times they go out and come back and say they can't find any more; so we say before you can close the case you have to go to the United States Attorney and he has to decide whether he is going to trial or not on just the handwriting. Many of the United States Attorneys will go to trial on just the handwriting. We discourage it as much as we can because we want the maximum of evidence just as any conscientious law enforcement officer will want before he brings the charge for indictment or trial against any individual. Often times we go out to the assistance of local law enforcement agencies like sheriffs and police departments. We have no idea what the background of the case is or how much evidence. Of course, once we are there; once the trial is in progress there is not much we can do—you fellows know we go to testify; often times that is all we have and we get convictions in a reasonable number of cases.

S/Sgt. GRAVES: We don't. In some sections of our Criminal Code no accused will be convicted on the sole evidence of the handwriting expert.

Dr. MILLER: Of course, that doesn't just apply to handwriting.

S/Sgt. GRAVES: People are so prone—I have been guilty myself—expecting the Lab. to solve my case for me. I have to get out and solve that case myself. Where the evidence is not there then I will have to have help but the essentials have to be nailed down by the investigator in the field. I shouldn't expect the expert to solve the case for me.

Sgt. DUXBURY: This hinges around the fact about two cases which I remember well from Saskatchewan involving the examination of documents submitted to the laboratory which were positively identified and the report sent back and later the exhibits were re-submitted for independent examination of another examiner for use as corroboration—that is the evidence of the second examiner corroborates the evidence of the first examiner. That is the only evidence they had in the case.

S/Sgt. GRAVES: What happened?

Sgt. DUXBURY: In the first instance we were going to try to test the case and nothing came of it. So the second time they were advised it probably would not be permitted.

S/Sgt. GRAVES: That is correct. The rule as far as we are concerned—we run into it in many instances, not only the documents and handwriting; in carnal knowledge cases, rape, etc., where corroboration is required by law the rule is a witness requiring corroboration cannot corroborate another uncorroborated witness. In other words you can have ten children, all who are incapable of taking the oath, who were present when the indecent assault

took place—those ten children CANNOT corroborate each other. You must have outside material evidence. Likewise, ten handwriting experts cannot corroborate each other.

Sgt. DUXBURY: The interesting point in these two cases, the question was brought up by the Agent of the Attorney General not by the examiner.

S/Sgt. GRAVES: I imagine the man in the field would have a pretty clear knowledge of that.

Sgt. DUXBURY: Yes.

S/Sgt. GRAVES: Certainly, one handwriting expert cannot—in Canada—corroborate the evidence of another because of our Criminal Code—it has to be clear cut, impartial and outside corroboration.

Mr. WALTER: S/Sgt. Graves, would the fact that the court had uttered the document or had it recorded—(make a difference?).

S/Sgt. GRAVES: That is very far from corroboration.

Mr. WALTER: I say it would, but it wasn't ruled so in Yorkton a year ago.

S/Sgt. GRAVES: It could be—it all depends upon the circumstances. The finding of it on his person might be corroboration, under proper circumstances.

Mr. WALTER: The prosecutor took it to the recorder and had it recorded and Mr. Regan thought that it wasn't corroboration and the Judge decided against that with other things.

S/Sgt. GRAVES: Also, was there not evidence given by the accused that he, in all good faith, got this cheque from some source?

Mr. WALTER: It wasn't the cheque of the accused and he did not take the stand.

S/Sgt. GRAVES: I have known that to happen where he was still able to cast a reasonable doubt how he got the cheque which he uttered.

Mr. WALTER: He had a pretty good, young lawyer.

S/Sgt. GRAVES: You can get your corroboration in court in similar types of paper, ink, the pens, and things of that nature. You may get it from attempted tracings in waste baskets—let the man in the field get it. He puts the chaps in the Labs right on the spot if he does not produce that evidence.

S/Sgt. EVES: I would just like to add a bit to this idea of one particular witness corroborating another. I think we should add that the case may be upheld in a lower court—the findings may not be correct as to law if it went to appeal but I know an actual instance where an expert witness was qualified by another and it was upheld—a County Court case in Lethbridge in 1946, and we, ourselves, felt that it wasn't true corroboration; nevertheless it did stand there as far as the court was concerned.

S/Sgt. GRAVES: I think that often happens—probably an indictment of our legal systems and even if the accused couldn't afford to appeal this case it shouldn't be allowed to happen in a case of this nature. After all, we are not here to persecute and these things have developed not in the last twenty or thirty years but they have been developing since 1066 as far as we are concerned. Our system is greater because thousands upon thousands of people have worked on these problems ever since. I think you will probably look back and find that these safeguards have been resolved from bitter experience and commonly speaking they should be observed.

Mr. MARSHALL: We found a good solution in London to corroborative evidence. The handwriting evidence obviously was all right and very easily proved. I have the photstats here—the two of them—but the only other

evidence that they had—they happened to have arrested this prisoner because he was into some other devilment and found in his home all kinds of blank money orders that had been stolen from the station some months before and then these blank money orders were rolling in from Detroit and Chicago having been cashed $100 each—running into thousands of dollars. The police were delighted that they had found the man eventually but this was the only evidence they had. I didn't want to act with just this evidence—the handwriting evidence which was very intersting and conclusive it seemed to me. The Crown Attorney, however, told the prisoner they had him cold and recommended that he confess—he co-operated.

S/Sgt. GRAVES: Mr. Marshall, actually you had some pretty good evidence there because the Criminal Code permits in searching a person's property for a particular crime and you find evidence of other stolen property and things like that—committed in the last five years—then you swing the onus of proof off your shoulders if this has bearing on your particular case and it is up to him to answer for it; you have a powerful bit of evidence there and it is quite possible that if presented properly and the evidence of the right type it might be the corroboration the court would accept. However, he confessed and that was it.

Cpl. HEAD: S/Sgt. Eves' original question about whose prerogative it is to qualify the witness was brought home to me in one particular case. I had not been testifying very long and was called in a murder case—a fellow murdered his wife and had written a suicide note. Of course the defence, as soon as I took the stand, before the Crown could attempt to qualify me got up and objected that I was inexperienced and this was a very serious case; so the Judge of the Alberta Supreme Court told the Defence Attorney that the court would decide and much to my delight he was the one who actually asked me the questions to qualify me. The Defence Attorney objected and was eventually told to sit down and that "this man will testify".

S/Sgt GRAVES: As long as you satisfy the Judge that is all that is necessary.

Deciphering and Photo-Recording of Indented Writings

BY

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Today, with the increase in all types of crime, the Document Examiner is confronted with numerous demands for his services, due primarily, no doubt, to the present day practice which makes the usage of cheques and legal documents more prevalent than that encountred a few years go. In order to counteract this abundancy of case work the Examiner finds himself in a position which, if at all possible, necessitates the using of methods or techniques resulting in a minimum of preparation, and consequently, a saving of time. These short-cut methods, however, must produce equally good or possibly superior results as those obtained by the usual methods.

With this in mind the examination of indented writings was considered, largely because this type of examination usually entails a great deal of time in order to obtain satisfactory results. There are a number of methods employed in the deciphering of indented writings, namely: the use of the parallel light, iodine fuming, fluorescent powder and the ultra-violet light, transmitted light, and possibly others; but with the use of each of these methods the examination is not finalized until the document, upon which the writings appear, is photographed for either illustrative or recording purposes. Of the previously mentioned methods, possibly all warrant merit to some degree insofar as the actual deciphering of the indentations is concerned; however, the photo-recording techniques which necessarily follow the decipherment generally leaves a great deal to be desired.

From the time a document is first examined for indentations, the indentations deciphered and the necessary photographs prepared, a considerable amount of time is consumed. Not only do the various procedures require time to complete, but the results in most cases leave something to be desired. The ultimate would be to develop a technique which would combine the deciphering and photo-recording of indentations into one step and possibly to achieve greater success than with the methods presently used.

The box now presented may be referred to as an Indented Writing Box and an endeavour will be made to demonstrate and illustrate that it represents such a technique. Needless to say this technique requires considerable practice before a satisfactory result may be obtained, but once achieved, will decipher and photo-record indented writings in a short space of time with a great measure of success. The construction of the box, operation, experimentation, and finally the satisfactory results it will produce in the decipherment and photo-recording of indentations, will be discussed.

The box is constructed of wood, and the dimensions are as illustrated in the attached plan drawings. Inside the box a platform of perforations is observed. The perforations cover a 15″ square in the centre of the platform

to accommodate a large document. Best results have been obtained using perforations $\frac{3}{8}''$ in diameter and staggered at $\frac{1}{2}''$ intervals. The purpose of these perforations is to secure a document firmly in place when a vacuum is created in the lower chamber, which consequently must be air tight.

The instrument employed to create this vacuum is an ordinary vacuum cleaner. The hole in the side of the box near its base is to accommodate the tube from the vacuum cleaner. The upper portion of the box is so constructed that when the lid fits into place it becomes a light tight compartment. Four rollers are installed in each corner of the box. These rollers serve to ensure that the lid may be moved freely and smoothly.

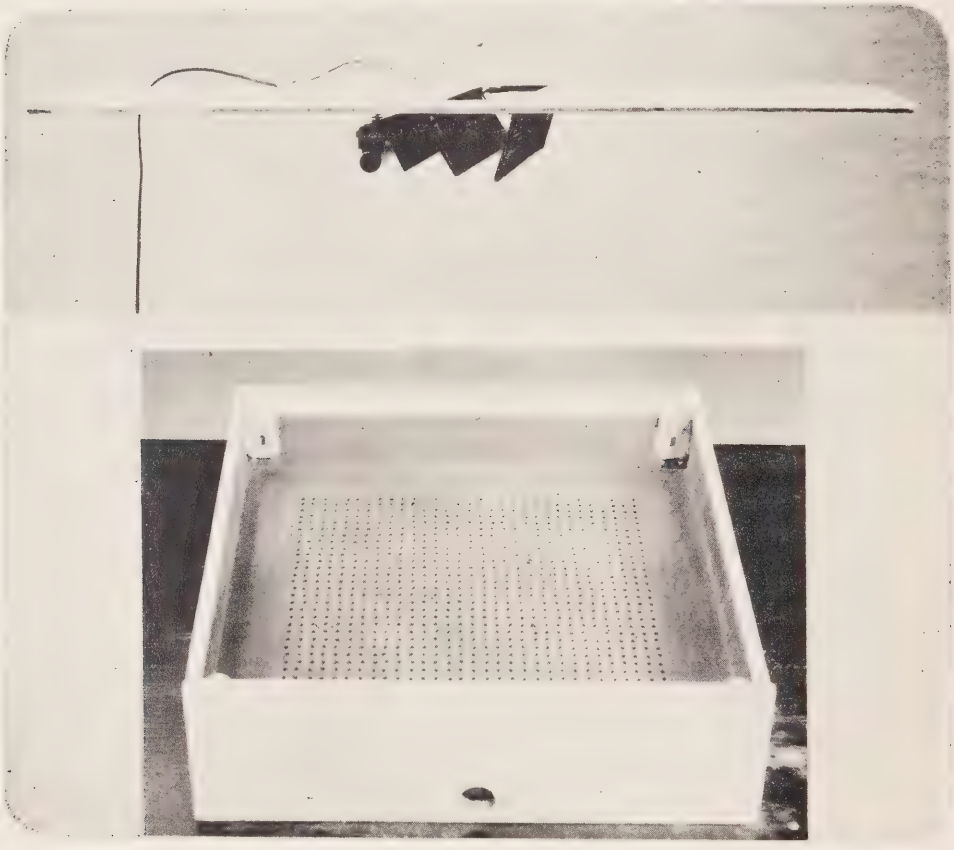

Figure 1

The lid of the box is approximately twice the outside length of the box, and centred in the lid is a slot which extends 15″ across the lid and is $3\frac{1}{2}''$ in width. On the underside of the lid are two baffles; both hinged and therefore adjustable. These baffles regulate the size of the opening through which any document is photographed. Behind the one baffle is found a metal shield and the means of illumination, being an 18″ incandescent tube. In all, there are the double baffles, light shield, and light. Both baffles and the shield are hinged

and adjustable, and the light itself may be raised or lowered by means of the thumb screws located on the upperside of the lid, tension being maintained by springs on the underside.

In order to complete the apparatus, a camera is also required, which is set up on a stand overlooking the slot in the lid of the box. The type and size of camera would appear to be a matter of individual preference. The camera used throughout was a 5″ x 7″ view camera with 7½″ lens which proved to be very satisfactory. The illustration, Figure 1, is a picture of the indented writing box showing a view of the lid and the box.

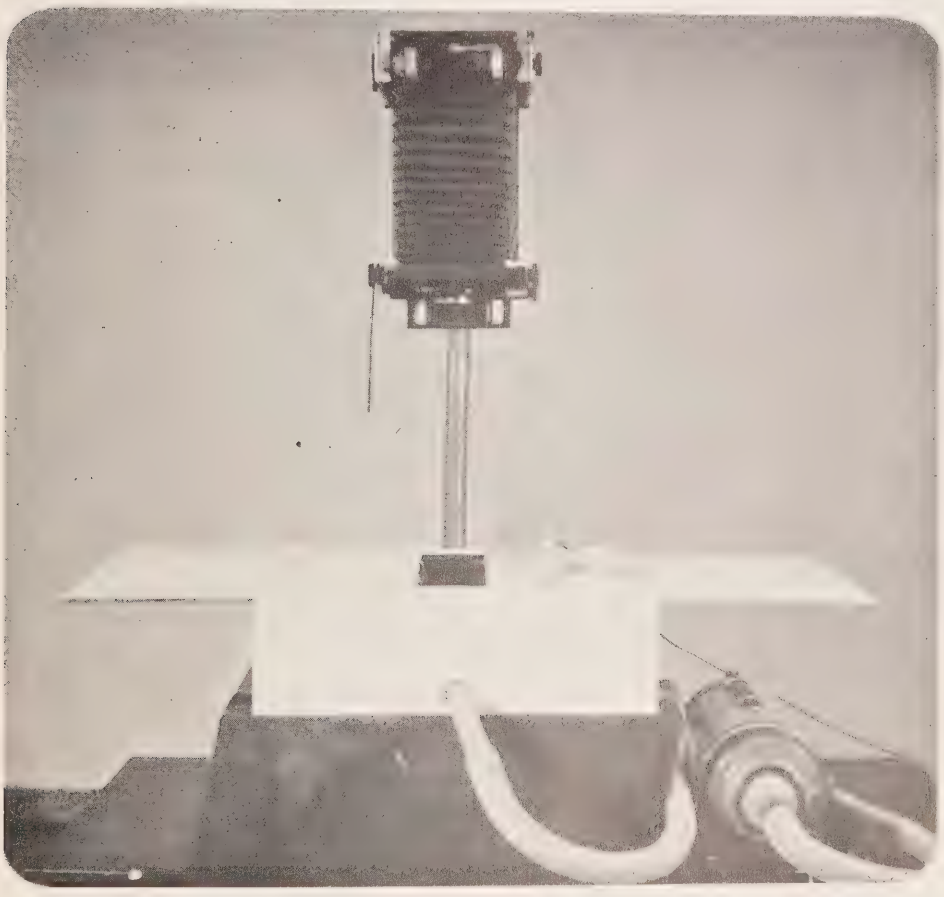

Figure 2

The actual operation of the indented writing box will now be dealt with and each step clearly explained. The actual setting-up of the box and accessories prior to beginning the operation is as illustrated in Figure 2.

Firstly the document to be examined for indentations is placed on the perforations in such a manner that will best accentuate the indentations when the incandescent light and vacuum cleaner are functioning. This may be done by adjusting the baffles, shield or light. Perforations which are not covered

by the document should be covered with black paper strips which will not reflect light: this covering is necessary so the effect of the vacuum is not lost by the entrance of air through the uncovered perforations. You might find, depending on the condition of your vacuum cleaner, that the vacuum created is so good, the document tends to collapse into the perforations, and this naturally will result in a poor negative as the hollow produced will register on the film. This condition may be overcome by placing a large square of fairly coarse cotton over the perforations, prior to the laying down of the document.

When the document is effectively positioned, the lid is placed on the box and the incandescent tube turned on. The baffles are then adjusted in conjunction with the light shield in order to produce a proper concentration of light between the baffles and which in turn will give a maximum visual impression of the indentations.

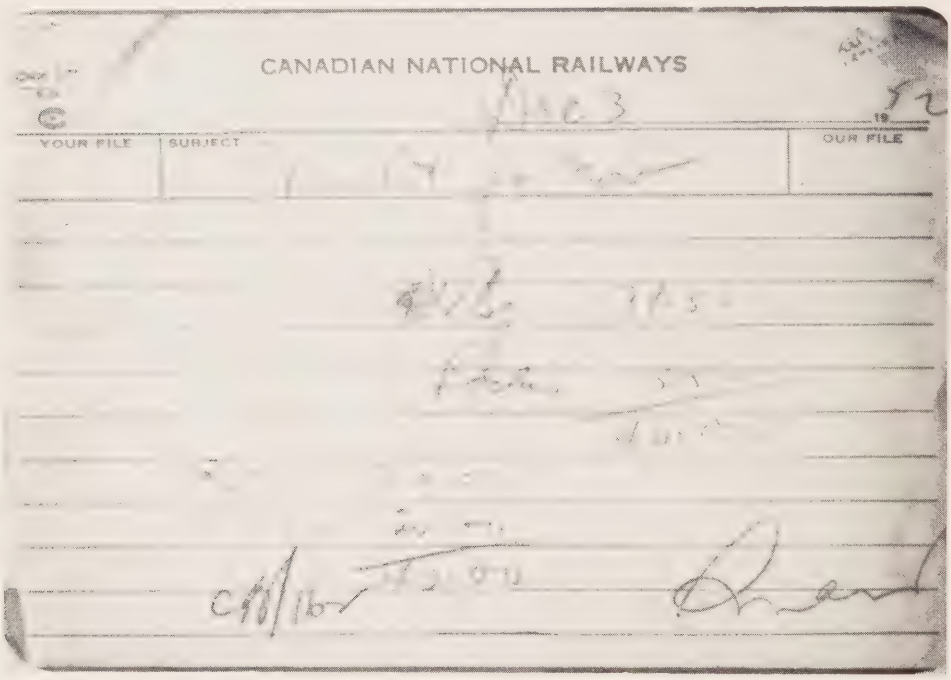

Figure 3

As soon as the lighting adjustments are completed, the camera which is set up directly over the document is focused on the document through the baffle opening. Needless to say a critical focus is essential to ensure a good sharp negative.

Following the focusing of the lens, the aperture setting is made and the speed setting placed to "TIME". As the aperture setting will vary with different documents experimentation is the only method by which the correct setting may be ascertained. Keep in mind that a large aperture opening requires less exposure or a fewer number of passes. Therefore you may experiment by first using a large aperture and a few exposures and gradually decrease the

aperture and increase the exposure until a satisfactory negative is produced. By employing this method it was found that an aperture setting of F.8 and approximately fifteen complete exposures or passes across the document, produced a good quality, evenly exposed negative. The type of film used throughout the tests conducted, was Pantomic X, and it proved to be quite satisfactory.

As soon as all of the aforementioned adjustments and settings have been completed, the box is ready for operation. It is first advisable to move the lid over the document a few times to ensure the lid is passing freely over the rollers; this is of the utmost importance. When satisfied all is well, room lights are extinguished and film prepared for exposure. Make certain that the slot is well off the document before exposures commence, and, as soon as the shutter is opened, begin moving the slot across the document in a smooth

Figure 4

and steady manner. At first one may be inclined to hurried or slow lid movements, but after a few attempts a constant speed will be maintained. The slot is passed from one side of the document to the other, taking care each time the document is crossed that the slot is well off the document before its return. As soon as the required number of passes are completed, the slot is moved off the document, and in this position the shutter is closed. All that remains now is to develop the film.

If all camera adjustments were correct, the proper number of passes completed smoothly, and the most effective concentration of light between

baffles obtained, a good quality negative will be produced. The exposure should be even throughout the negative; however if this is not so, the fault may lie either with poor lid movement, or possibly an insufficient number of passes made at a slow speed.

The illustration, Figure 3, demonstrates a print bearing heavy lines towards each end of the document. These heavy lines were produced when the lid movement speeded up as the end of the document was reached. This occurred at both ends of the document and resulted in under exposure of these portions as shown in the print. The opposite defect (over-exposure) may also be produced if the document photographed is too large.

Another defect which may arise in a negative is the presence of dark or light bands across the documents. (Figure 4). These bands are caused when the lid is moved hesitatingly across the document only two or three times,

Figure 5

with a large aperture setting. These dark or light bands of over or under exposures may be eliminated by decreasing the aperture setting, and increasing the number of passes or exposures. The greater the number of passes made across the document with the lid, the better chance of an even exposure, and a larger margin of speed error of lid movement is allowed.

The indented writing box as now observed did not contain a good many of its present features. The first working model of the box utilized a lid with a narrow slot, and on the underside of the lid a single shield was attached to the incandescent light bracket. At this time the vacuum box was also used. This initial trial box gave success but certainly was not satisfactory in all respects. All negatives produced revealed an uneven exposure. One half of the

negative was under exposed while the remainder was over exposed. This particular defect is quite evident as illustrated in Figure 5. In order to eliminate this uneven exposure numerous light adjustments, varied lid movements, and camera settings and positions were made but each attempt resulted in the same uneven exposure. Finally the direct cause of this exposure defect was determined and a correction devised. This led to the addition of baffles in the new box.

To properly understand this problem and its correction you must try and visualize the lid of the original box, that is the narrow slot, the shield and light. Photographs produced with the original box were taken through the slot contained in the lid of the box, and the lighting was controlled by means of a single shield. Experimentation proved that both of these features contributed to the resultant poor negatives.

Considering the slot position first of all, the fact that it was located in the lid of the box resulted in it being approximately 3½ inches from the document to be photographed. The film, recording through the slot at this distance was not receiving a narrow concentrated area of the document, but instead was recording portions of the document that were actually back of the slot on either side. The lens obtained a wide field of vision through the high slot, especially when the slot was positioned at the extreme ends of the document.

It was also discovered that uneven light intensities were causing the over and under exposures of the film. The slot when it was in the extreme right position allowed the camera to record the intense light from its source along the base of the shield. This intensity of concentrated light at the shield resulted in an over exposure of the negative; however, when the slot was moved to the opposite extreme or left end, the camera recorded shadowed or subdued light. This poor intensity of light caused an under exposure of the negative. The light across the slot as seen by the camera therefore, would be quite intense along the right lip of the slot, and rather subdued along the opposite lip. The two extreme contrasts of light intensity would each expose the negative to a different degree. The solution therefore was to develop a method controlling the light to ensure that a ray of equal intensity would pass over the document immediately below the slot, and also to construct the box in such a way as to have the slot lowered closer to the document.

The manner in which this was accomplished was by means of two baffles which were placed on either side of the slot and extended to within a short distance of the platform and the light and shield moved further back from the slot. This arrangement resulted in a very even subdued light passing over the document between the slot created by the baffles. With this arrangement the slot in the lid had to be extended so that the camera could record through the lower slot formed by the baffles when it was moved to either end of the document.

A trial photograph made with the above arrangement produced an evenly exposed negative. The desired intensity of light across the baffles could be controlled by the shield, the raising or lowering of the light and by the baffles. These numerous modifications eventually resulted in the construction of this new indented writing box.

The conclusions derived from the numerous experimental projects undertaken with this box, would certainly indicate that it fulfilled all expectations in the decipherment of indented writing and their photo-recording. The box

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not only produced satisfactory results for the Document Examiner but combined the decipherment and photo-recording of indented writings into one operation, eliminating the considerable amount of preparation normally encountered in an examination of this type, consequently resulting in time saving. Practice of course, is essential prior to the production of satisfactory prints, but once achieved by following a set pattern, will enable other documents to be photographed in a matter of minutes. Actually with the resultant satisfactory prints obtained the examination for indented writings may be made from the prints rather than from the exhibit document. Minute indentations possibly observed in a visual examination of the exhibit but not actually recorded, appear to "stand out" to a greater degree in a print produced by the box, consequently minimizing the possibilities of their being overlooked.

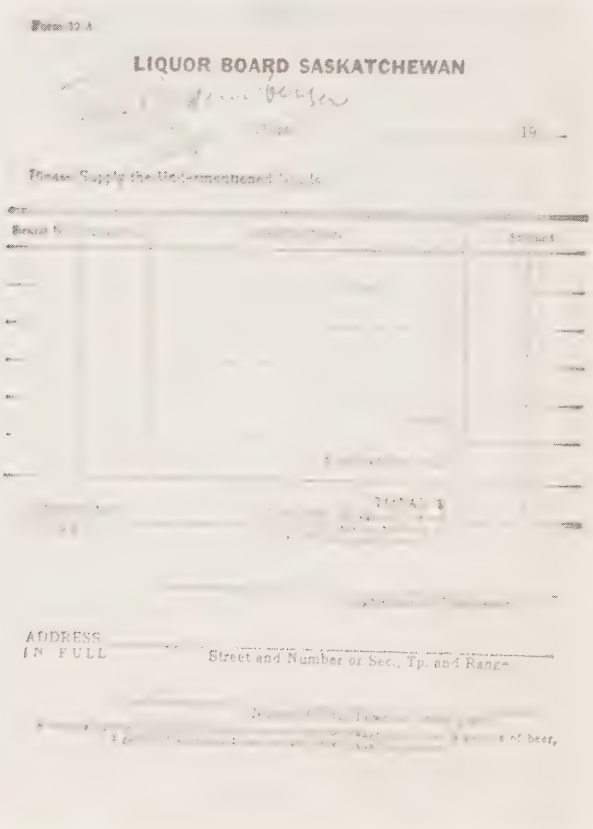
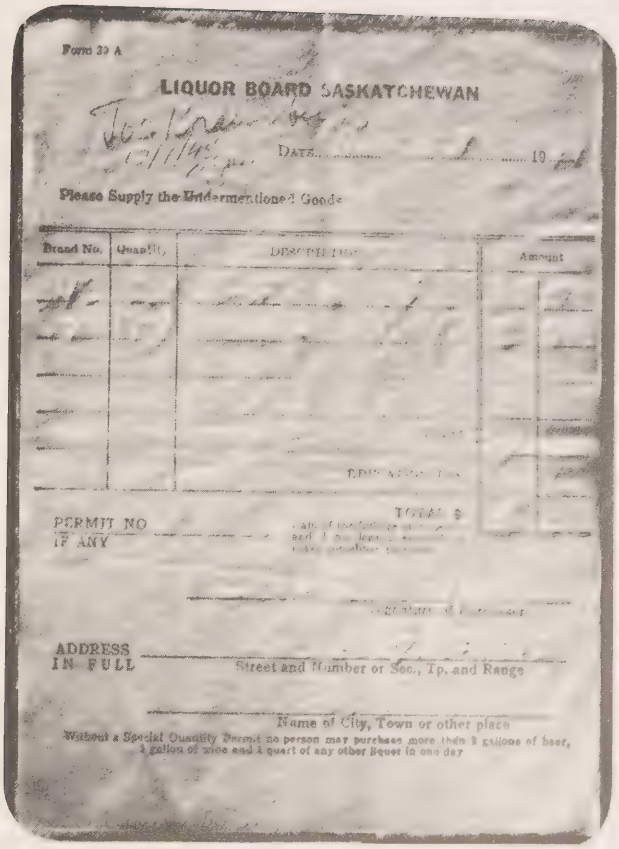


Figure 6

Figures 6 and 8 are two different documents bearing indentations and photographed by means of ordinary photographic technique. These illustrations fail to produce the indentations sufficiently so that they may assist in decipherment.


Form 39 A

LIQUOR BOARD SASKATCHEWAN

DATE..... 19...

Please Supply the Undermentioned Goods

Brand No.	Quantity	DESCRIPTION	Amount

TOTAL $

PERMIT NO
IF ANY

ADDRESS
IN FULL

Street and Number or Sec., Tp. and Range

Name of City, Town or other place

Without a Special Quantity Permit no person may purchase more than 2 gallons of beer, 1 gallon of wine and 1 quart of any other liquor in one day

Figure 7

Figures 7 and 9 illustrate the same documents as produced by the indented writing box. It will be noted that great detail is recorded and the indentations are clearly denoted.

In comparing the results of these two techniques it is quite apparent that the indented writing box is capable of obtaining extremely satisfactory results in the deciphering and photo-recording of indented writings.

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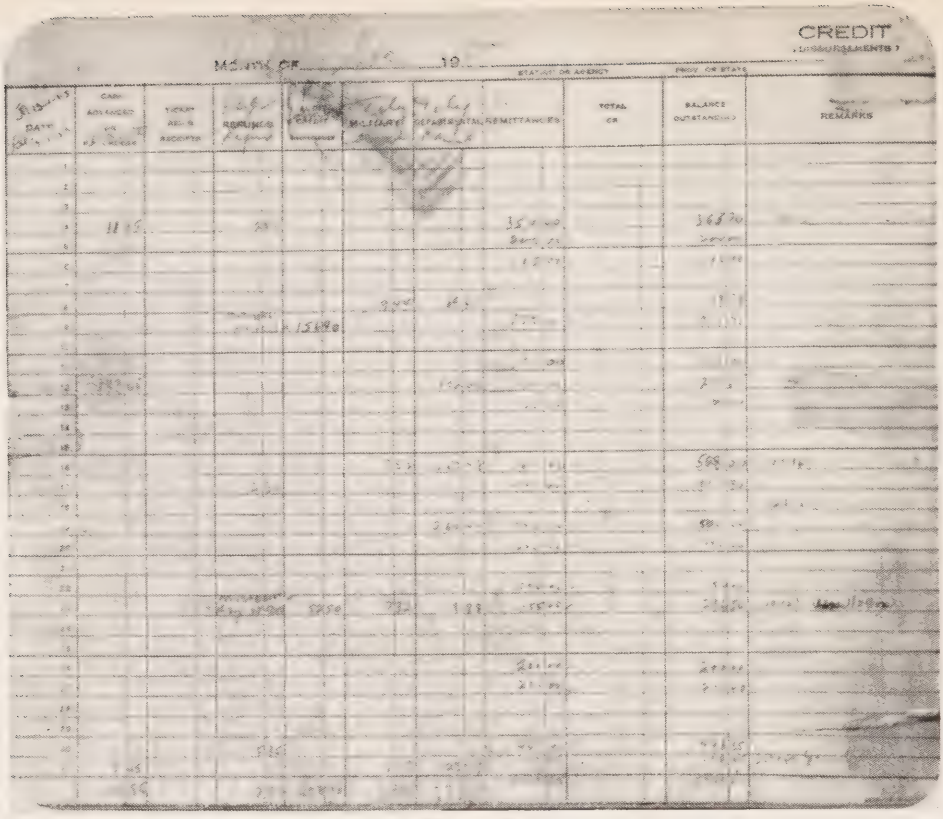

Figure 8

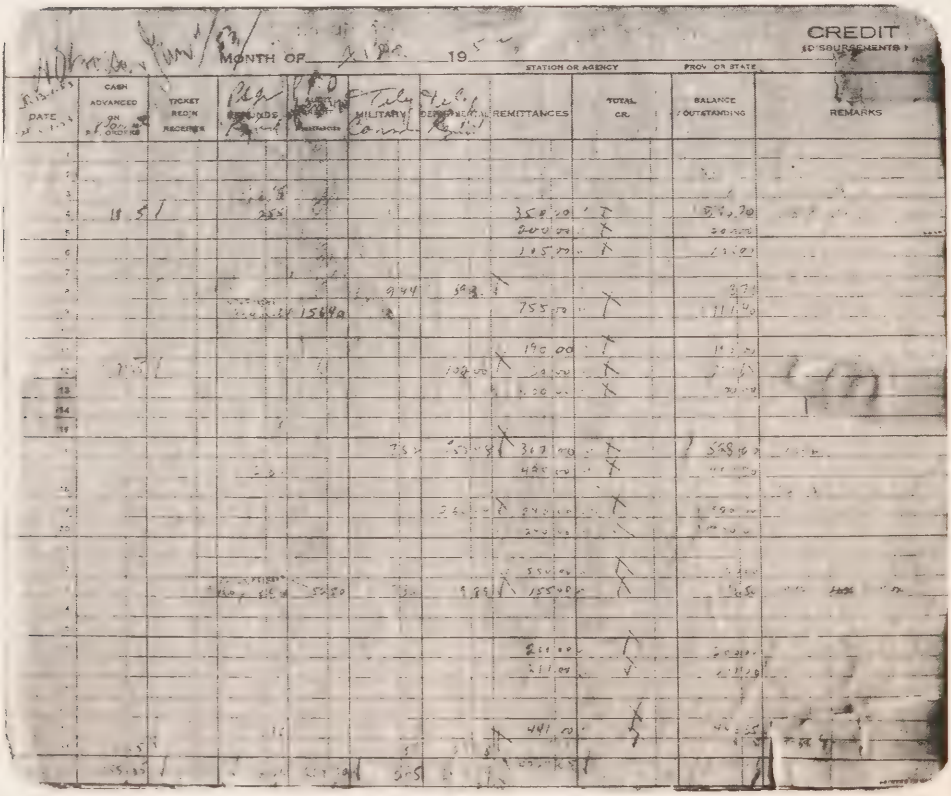

Figure 9

Discussion of Cst. Warren's Paper

Cpl. DE LA DURANTAYE: Do you photograph documents from both sides and from the top of the document?

Cst. WARREN: You can, but the camera is steady and does not move; only the slot moves; the document is stationary; the only thing that moves is the slot. This cover is almost like painting in the document with the slot open.

When the document is positioned on the perforations, it is put on there so that the indentations show to the greatest advantage when the light is on.

Cst. WRENSHALL: Then there is no point in taking more than one shot of it—say, reversed in position and getting the indentations.

Cst. WARREN: Well, if you think that possibly the indentations do not show as well in your first position it would be just as well to reverse it and try the shot but as a rule the one photograph is sufficient.

Cst. DUKE: What is the maximum size of document that would successfully . . .

Cst. WARREN: There is no set size at all—it depends on the size of the perforated base and also the room which you have allowed in front of the slide—you are limited in the size but, of course, you can overcome that by building a larger box.

Lt. SMITH: Is it possible in some cases where the indentations may be weak from one position and stronger in another that if you were to take two exposures—one swinging the paper around so the light moves from end to end and also from side to side you would often get a composite of two negatives which would strengthen your image.

Cst. WARREN: That is correct and could be done. Possibly I should elaborate a bit on the fact that I stated this box will aid in deciphering. I have found that the resultant prints produced with the box were actually good enough so that the examination of the indentations could be conducted from the print rather than from the exhibit document. Now possibly you will find sometimes that the minute indentations which appear on the document in a visual examination are overlooked; while in a print they seem to stand out to a greater degree and, consequently, they do minimize the possibilities of their being overlooked.

Lt. PURTELL: Did you experiment with the distance from the light to this slide—the distance up and down—vertically?

Cst. WARREN: Yes—the first working box had a light and shield right up close to the lip of the box and as I said we found that gave too severe a light and concentrated the light so it was found that with the light moved further back from the slot we were getting a rather subdued light which will bring out the indentations far better—a subdued light rather than an intense light.

S/Sgt. EVES: This is more in the nature of commenting on rather than questioning; but I think one of the big defects in all parallel light photographs is the rapid fall in exposure from one side to the other and, consequently, you are in a position to perhaps decipher one side of the document

quite well but the other side isn't very easy to decipher unless you take a series of photographs, but I think this overcomes it very well—operating on the same principle.

Sgt. DUXBURY: I think with this box, especially in handprinting that a picture taken in one direction and then with the document turned around at right angles will give you the strokes which run at right angles,—and, you can produce, for instance, a good picture of the letter "T" by superimposing the negatives taken at right angles—one for the vertical staff and one for the cross staff.

Cst. WARREN: That is quite true.

Decipherment of Altered and Charred Documents

BY

DONALD B. DOUD

Milwaukee, Wisconsin

Ladies and Gentlemen, I would like, on behalf of myself and for the other members of the United States who are here, to express our appreciation for your wonderful kindnesses and hospitality to us. We have certainly appreciated it.

There is a school of thought among some criminologists that a perfect crime never was, nor ever will be, committed; that matter is never so completely disguised or destroyed as to remove all proof of its former identity.

While the scores of unsolved cases plaguing law enforcement officials of all countries seem to belie this theory, some fields of investigation, perhaps more than others, bear witness to its essential truth. The questioned document field is one of these. It is almost impossible, for example, to alter a document fraudulently or otherwise without some evidence of the alteration or original writing being ascertainable.

By the same token, the attempted destruction or defacement of a document by burning, wetting or obliteration usually accomplishes little but to throw suspicion on the perpetrator, the document itself often being quite decipherable.

This paper is designed to offer a few simple techniques easily available to the well-equipped document laboratory for deciphering charred and altered documents. Limitations of space render impossible a detailed coverage of all of the methods applicable to all problems. The various published techniques run into the scores. Those interested in a more detailed discussion may refer to a book by this author to be published next year as part of the Police Science Series.

Decipherment of Eradicated Ink Writing

For the purposes of this discussion the methods for deciphering chemically or abrasively erased ink writing will be divided in the three categories of writing inks most commonly in use today, that is:

Iron Gall Inks—(sometimes referred to as permanent inks).
Aniline Dye Inks—(usually of the washable type).
Ball Pen Inks.

While appearing much the same to the naked eye, these three inks are materially different in composition, and decipherment of the writing executed with them may require different procedures entirely. This may seem paradoxical since the agent used for most eradictions—a chlorine bleach in combination with a clearing agent—works about equally well with all three inks, excepting perhaps the newer ball pen. However, the reasons for this apparent enigma will soon become clear.

Preparatory Steps

Preliminary Photography.—Before any treatment is contemplated, the document in question should be photographed actual size with a good panchromatic or orthochromatic film in order to preserve a permanent record of

its original appearance. Permission of the court to use any chemical that might alter the appearance of the document should, of course, always be obtained.

Determining presence of ink eradication.—The use of an ink eradicator is not always readily apparent from examination of the original document when the chemical is skillfully applied. A fresh eradication usually is more imperceptible than an older one, the passing of time tending to turn the affected area yellow.

There are three methods of ascertaining the presence of eradication chemicals on a document. They are—testing with chemical reagents, visual examination, and smelling the document. The latter suggestion may sound rather unscientific but in actuality nine out of ten eradications can be detected by the slight yellowing of the document and, or, the acid smell generated by the chlorine in the eradicator.

A chemical spot test consisting of 5 per cent silver nitrate acidified with 1 per cent nitric acid is a proven method for ascertaining the presence of a chlorine bleaching agent. Application of the chemical by means of a pointed wooden applicator and then exposing the spot to light will reveal the presence of chlorine by immediately turning black.

Decipherment of Iron Gall Inks

Iron gall inks embodying, as they do, the salts of ferrous iron, respond best to two principal decipherment methods—ultra violet and chemical fuming. The fuming process depends wholly on the chemical response of the iron in the ink, and the ultra violet light treatment depends at least in part on the same element for its effectiveness.

Fuming with acidified potassium thiocyanate.—Potassium thiocyanate (sulphocyanate) acidified with hydrochloric acid produces fumes which, when applied to eradicated iron base ink, restores the original writing in a clearly legible red colour. Space does not permit the chemical explanation for this phenomena. However, briefly it is caused by the chemical change in the iron salts from invisible ferrous to visible ferric metal.

The two most popular techniques for applying the fumes are by means of a Gooch funnel or an atomizer of the DeVilbiss respiratory type. The latter method actually sprays a fine film of liquid on the document rather than exposing it to fumes. In the method utilizing the Gooch funnel*, a wad of glass wool is placed in the bulb of the funnel, a few potassium cyanide crystals next placed on top of the wool, and finally 8 or 10 drops of hydrochloric acid are applied by means of a dropper to the crystals. When the large end of the tube is placed to the mouth and the breath blown steadily forward, the fumes are driven to the desired surface.

The writing will generally be restored quite rapidly as a visible red outline. On occasion, the entire area of the ink eradication will also turn a slight red colour. Both of these manifestations should be immediately photographed with colour blind ortho type of film which will portray the eradicated writing much darker than the original.

With reference to the use of potassium cyanate in this process, it should be stated here that the chemical fumes generated by this combination with hydrochloric acid are not the same as those used in the prison gas chambers. It is not, however, advisable to breathe in an excessive amount of fumes.

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* A small glass tube about $\frac{1}{4}$" in diameter, smelling to an inch bulb towards the center which, in turn, connects with the mouthpiece.

The DeVilbiss Company of Toledo, Ohio, manufactures a device called the Nebulizer for treating respiratory ailments. When potassium thiocyanate crystals are inserted in the center receptacle of this device together with a few drops of 10 per cent hydrochloric acid, the subsequent bulk manipulation causes a fine spray or mist to emerge. In many ways this type of application is much superior to the fuming process. A higher concentration of liquid strikes the document, a wider area is covered and there is no risk of blowing out droplets of liquid, as sometimes happens when moisture collected on the inside of the Gooch funnel.

Following photography of the deciphered results, application of ammonium hydroxide fumes (with the treated area held upside down over the open end of a bottle of ammonia) removes all traces of the chemical application. Subsequent fuming, however, with the same cyanic acid gas will again restore the eradicated writing as before.

Fuming with ammonium hydrosulfide.—This old, but tried and true, method of recovering eradicated ink writing has been in use since the early 1900s.

The required apparatus consists of a heating element over which is placed a beaker containing a sulfide solution. A hose is passed from the top of this beaker to an enclosed glass bell under which the altered document is placed. The heat causes sulfide fumes to pass into the glass bell. When a sufficient concentration is obtained, the erased writing gradually becomes visible in a brown-black image.

While about equally as effective as the cyanate gas method, fuming with ammonium hydrosulfide results in an odor which is quite disagreeable and frequently associated with rotten eggs. It is definitely not recommended for courtroom treatment of documents.

Fuming with 8 hydroxyquinolin.—This is one of the newer chemicals used in the decipherment of ink writing. The writer has only briefly experimented with the process. However, it is said to be particularly effective with inks of low iron content which do not respond well to other methods. For some unknown reason the chemicals seem to create a multiplying effect when combined with the eradicated writing, thereby increasing its visibility. This solution is likewise applied with a Nebulizer. The formula for it is as follows:

1% 8 hydroxyquinolin
1% acetic acid
25% H_2O
73% acetone

Ultra violet light examination and photography.—Ultra violet light, or black light as commonly known, is the document examiners most useful tool for deciphering eradicated ink writing. This band of light is located in the invisible, short wave length section of the light spectrum.

The process depends for its effectiveness upon the fluorescing properties of the invisible salts (largely iron) still remaining in the paper following eradication. When the ultra violet light is directed on a chemically altered surface, the outline of the original ink writing is portrayed in a luminous, phosphorescent-like glow. In some instances this image is so diffused as to make visual examination difficult. However, photography by means of orthochromatic film will usually record the reflected image.

The process above described is termed reflected ultra violet and is analogous to ordinary photographic methods except that an ultra violet unit is substituted for incandescent light. Photographic exposure is made using the ultra violet light reflected from the object itself.

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Many excellent ultra violet units are available for this type of examination. Probably the most popular is a Hanovia mercury vapor lamp which discharges an intense ultra violet ray. Excellent portable units are available such as the Ever-Ready Carbon Arc which is equipped with a series of filters of varying densities to take in selected portions of the ultra violet spectrum.

Individual circumstances and equipment naturally govern the exposure time to be given ultra violet light photographs. In the writer's experience using two lamps placed approximately two feet from the object board with Eastman commercial ortho film, an exposure of one minute at F22 is indicated.

A second method, frequently used when the simpler reflected ultra violet process fails, is termed "fluorescent ultra violet". Here the image photographed is pure fluorescent light emitted by the material itself which has been excited by the ultra violet light. Virtually no visible light reached the photographic plate.

In practice, this process is little different from the reflected light method, except that a No. 2 A filter is placed over the camera lens and a panchromatic film used rather than orthochromatic. The writer has found an ordinary K 3 yellow filter to be effective in eliminating the visible ultra violet rays.

Infrared ray photography.—Infrared ray photography is sometimes of value in revealing chemical erasures and should be tried when other methods fail. The details of this process are described in the following section devoted to erased pencil writing.

Decipherment of Erased Pencil Writing

The lead portion of the ordinary mechanical or wood pencil is made up essentially of pulverized graphite and clay which are annealed together and hardened by a heating process. As a rule, the more clay that is added to the mixture, the harder the pencil point.

When an attempt is made to erase pencil writing from paper, we find many varying degrees of success. The decipherability of erased writing depends, for example, upon the density and hardness of the original pencil stroke, the makeup of the paper itself insofar as the depth of pencil penetration is concerned, the kind of eraser used, and the thoroughness with which the erasing process is carried out.

It follows then that the successful decipherment of erased pencil writing depends upon how much of the pencil was completely washed from the paper surface. But it does not necessarily mean how perceptible to the naked eye is the evidence of pencil graphite.

The erasing process, in most cases, pushes particles of graphite deep into the paper fibers, which are decipherable by the penetration action of infrared ray photography. In an erasure where the graphite is merely smeared over the surface of the paper, decipherment may be exceedingly difficult, if not impossible. Manifestly, the erasure which actually wears away the surface of the paper itself holds very little chance of successful decipherment.

Several methods are open to the document examiner confronted with an erased pencil problem. Some are purely visual or photographic and do not affect the appearance of the document itself. These should be attempted first. Other techniques, such as the iodine method, cannot fail to alter the appearance of the document somewhat and they should be attempted as a last resort, the other methods failing and then only upon permission from the proper authorities.

Infrared ray photography.—Beyond the long or red end of the light spectrum there exists an invisible radiation called infrared. This light is quite amazing in its effect on certain objects and is capable of being recorded on a specially prepared photographic film. The action of the infrared ray can best be described as "penetrating", for it is capable of "seeing through" paper or, when used as a medical tool, of revealing veins underneath the epidermis. Some objects are invisible to the ray and others may block out completely. It is herein that its value lies in pencil erasure problems.

When infrared ray photography of pencil erasures are made, the particles of graphite remaining on the surface of the paper or those pushed into the fibers are rendered opaque to the infrared ray, thus forming a transparent image on the photographic negative. The disturbed area of the erasure may also be made more visible by the infrared ray.

In practice, infrared ray photography is little more complicated than ordinary filter photography. The usual professional copying equipment is perfectly satisfactory, except that special attention should be given to the light tightness of camera and film holders. The infrared radiation is most penetrating.

The necessary elements for this type of photography are: infrared film of the professional sheet variety, a suitable infrared transmitting filter such as Wratten Nos. 87 or 25 (the 87 filter transmits almost pure infrared ray and the other lighter red filters passing a correspondingly greater amount of visible light), and an incandescent light source of the photoflood type. The writer has found that with two No. 2 photo-floods placed three feet from the object board, an exposure of one-half minute at F 16 is indicated. Development may be carried out in any of the standard developers; however, increased time is recommended in view of the inherent flatness of the infrared emulsion. This office has successfully used X-Ray developer to increase the contrast of the film.

Some authorities claim that a shift in focus is necessary to compensate for the longer length of the infrared ray. However, this depends largely on the lens equipment available. This office has not found it necessary to make any compensatory adjustments of this kind, except to place a Wratten A filter over the lens for focusing, which is replaced with the Wratten 87.

In closing, it should be mentioned that some particularly troublesome problems are susceptible to decipherment by super-imposition of negatives. This is to say, two or three infrared films are taken at the same magnification of the erased area, each one is slightly underexposed. These negatives are then overlaid, one on the others, for printing. This process results in a cumulative effect of the infrared ray.

Sidelighting photography.—This type of photography is designed to bring out the indentations in paper made by the original pencil point pressure. Depending upon the pressure of the original writing, these grooves usually remain to some extent in the paper despite the erasing process. Sidelighting photography contemplates the use of a point source of light directed obliquely across the surface of the paper. Illumination thus used throws shadows into the grooves made by the pencil point and, when photographed, results in a transparent outline on the negative. In some cases it is advisable to make two negatives, one with the light directed from the side, the other with the light coming from the top. When these two negatives are superimposed and printed, both horizontal and vertical writing strokes are rendered visible.

In cases where neither infrared photography or sidelighting photography is sufficient for decipherment, a combination of the two may prove effective. This may be done by photographing the erasure both with sidelighting and infrared ray photography and superimposing the two negatives for printing

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or by making an infrared negative taken with the oblique illumination. This latter process has the disadvantage of excessive exposure time and the resultant risk of blurred image from camera movement.

Use of fluorescing powders.—Similar to oblique lighting photography, this procedure depends upon the presence of indentations of the paper made by the pencil. In carrying out this process, a fluorescent powder, such as anthracene, is carefully applied to the erased area with the tip of one finger, care being taken to avoid excessive pressure which would drive the powder into the indentations. When viewed under ultra violet light, the outline of erased text is clearly visible as a dark outline surrounded by white radiation. Erased typewriting can also be deciphered by this method.

Photography by reflex printing.—This is a simple method for deciphering erased pencil writing by means of a photographic printer and reflex paper of the Kodagraph Contact type. The increased visibility secured by reflex copy printing is sometimes very useful in bringing out faint impressions of erased pencil writing. In application, the document to be photographed is placed on a sheet of reflex paper, with the emulsion side up. A reflecting surface similar to tin foil is placed on the back of the erased document. Exposure then made through a yellow filter creates a reversed reflex image of the document in question. This paper negative is then printed similar to an ordinary negative, except that the background is made somewhat darker.

Application of Iodine.—There are numerous published methods for the application of iodine to erased pencil problems. Some suggest the use of iodine fumes; others suggest application of the iodine directly to the paper. Probably the most popular formula is one published by Joseph Ehrlich of Vienna, Austria. It is applied by means of a bit of cotton batting wrapped on the point of a wooden applicator. This formula reveals not only the indentations made by the pencil point but also outlines distinctly the area of erasure. The formula consists of the following:

Solution A—

1. Dissolve 200 grams of magnesium chloride in 100 ccms of water.
2. Dissolve 0.15 grains of iodine and 40 grains of potassium iodide in 40 ccms of water.
3. Mix solution No. 1 and No. 2 together.

Solution B—

1. To remove stains caused by Solution A—dissolve one ounce of ordinary hypo in 200 ccms of water.

Obliterated or Effaced Documents

Space does not permit a detailed discussion of this subject in its many ramifications. Generally speaking, however, when one writing is placed on another of a different composition or different writing medium, infrared ray photography, transmitted light photography and sidelighting, as described in the foregoing sections, are useful in recovering the written text. Another method is to use a filter of the same color as the obliterating material, whether it be writing, rubber stamp impression or stains.

When documents are effaced by moisture or merely faded as a result of age, ultra violet light application or fuming are the most successful in deciphering the original writing. Manifestly, when washable ink writing is subjected to water or moisture, the ink is decidedly affected and may be removed from

the paper entirely, thus preventing any decipherment of the original text. Iron gall ink is usually more resistant to the effects of moisture, as is ball pen writing.

Charred Documents

Burnt documents may be in any condition from a slightly charred whole document to a mass of disintegrated fragments. They may be found in any of a number of degrees of charring from slight carbonization to a greatly decomposed ash. It can be seen, therefore, that no single decipherment technique is applicable to all problems. Some of the more successful techniques are outlined below. For purposes of clarity they are divided into categories of photographic and visual decipherment methods.

PHOTOGRAPHIC METHODS

The contact process.—It has long been known that certain gases and vapors will fog the emulsion of the photographic plate or film without exposure to light. When a burnt document is taken into a photographic dark room and placed between two color-blind commercial photographic plates, with the emulsion side of the plates in contact with opposing sides of the charred documents, a latent image frequently results following a period of four to six weeks exposure. The plates thus exposed are processed in the usual photographic manner and prints made from the negatives.

Filter photography.—Photography of a charred document with a Wratten No. 48 deep blue filter in conjunction with commercial film frequently appears to accentuate the difference in actinic power of the charred document background as compared to the written portions. Ordinary incandescent lighting is used and compensation is, of course, made for the increased exposure time necessitated by the blue filter.

Infrared ray photography.—In certain cases infrared photography of a charred document produces quite startling results, especially where the initial writing mediums were typewriting, pencil, or dense iron gall ink. For details of this process reference should be made to the section on decipherment of pencil erasures.

VISUAL DECIPHERMENT METHODS

In many cases it is merely necessary to visually inspect the charred documents and record the results of the examination. While the following described processes are intended primarily for this use, the results of visual decipherment methods can also be photographed.

Reflectivity method.—When a light is directed on a charred document at certain angles the writing will stand out as dark areas surrounded by white, or, occasionally, the reverse. There is no set rule of thumb for applying this "Flair type" of lighting. It is a matter of adjusting the light to the proper place where the writing stands out most clearly.

Alcohol glycerin emersion method.—In this process a solution made up of two parts water, five parts alcohol, and three parts glycerin is placed in a large processing pan. The charred fragment is placed on the top of this solution and readings made during various stages of its absorption of the solution until it finally sinks below the surface. This method has no effect on the charred document itself and, if unsuccessful, other procedures can be used.

Silver nitrate method.—Application of silver nitrate to a charred document should be a last recourse, as it alters the appearance of the document. In practice, a solution of 5 per cent aqueous silver nitrate is poured over the charred fragment. A second glass plate is then placed on top of the treated document. Within two or three hours any writing originally on the document may become visible as a black image against the grey background of the paper.

Choral hydrate treatment.—This method was developed during the second World War by two Englishmen, H. J. Walls and W. D. Taylor, who were confronted with the problem of deciphering documents burnt in the German air blitz. They employed the following chemical formula for recovering the writings:

> A solution of 25 per cent chloral hydrate in alcohol is carefully applied to both sides of the charred document with a camel hair brush. The specimen is next placed on a small piece of heat resistant glass which is inserted in an oven which is heated to 60 C. When dry, the specimen is again soaked with chloral hydrate and the same drying process carried out. The emersion, drying procedure is repeated several more times and on the last application a 10 per cent glycerine solution is added to the chloral hydrate and the final drying is carried out as before. The gradual accumulation of chloral hydrate crystals appears to create a "clarifying" action on the writing.

Again, limitations of space do not permit a full discussion of all techniques applicable to charred document problems. The author intends, however, to incorporate in his Police Science publications all of the known methods for charred document decipherment, which should provide a valuable source of reference to those interested in this subject.

Discussion of Mr. Doud's Paper

Lt. PURTELL: On the subject of potassium cyanate, I had Don's experience of blowing out my lungs one day on a case and getting some of the solution on to the questioned documents. Now, I take a Florence flask, a two holed stopper with two pieces of glass tubing and in one I put a bulb and from the other one I run out a bit of a glass funnel—just hold it over; just press the bulb; a nice easy way and you can handle a big volume of documents in a day, a mass production basis.

Mr. DOUD: That certainly sounds like a good method.

Dr. COLDWELL: Mr. Doud, have you done anything trying to make documents less fragile—treating with solution so they would be easier to handle?

Mr. DOUD: Yes, I have soaked them in glycerine and I have done all sorts of things like that. I certainly wouldn't soak the documents in anything until I tried the contact method—if it is important—because if you soak a document in glycerine and then try the contact photographic method, it is almost certain to fail. Maybe you have other ideas.

Dr. COLDWELL: No, I was just looking for information.

Mr. DOUD: It really is a problem. I read Mr. Tyrell's description of the way he separated several documents and it was a tedious job. It took him weeks to do it; some of the documents were stock certificates folded over three times. He had to remove the strings which were still impressed right into the document and to carefully slit them and fit all the documents together. It was very difficult. By the way, before he tried this contact method, Mr. Tyrell

subjected the documents to ultra violet light and seemed to feel that that had some sort of an activating effect on the fragment before he put it between the photographic plates. Now I don't know whether that is scientific or not but he seemed to think that it increased the effect of the fumes or whatever it is in the charred fragment on the photographic plate.

Cst. ZITZELSBERGER: Mr. Doud, have you done any work with the ball point pencils?

Mr. DOUD: I have done some. I have tried to erase but I haven't done work in trying to decipher them. I think they certainly can be erased from the document quite easily. However, I think it would actually simplify the problem to some extent because you have indentations similar to a ball pen that could be recovered by side lighting.

Lt. PURTELL: I had a case like that which infra-red photography brought out—liquid pens and pencils.

The Indiana State Police Fraudulent Cheque File and a Possible Solution to the Worthless Cheque Problem

BY

Dt. F/Sgt. E. C. SCHROEDER

Indiana State Police

Indianapolis, Ind.

Each day, tons of documents are executed, consummating transactions involving millions of dollars. Fortunately, most of the documents which are executed are genuine. If they were not, our monetary bargaining agent would be severely crippled. However, imperfect human nature, and the obvious opportunities to make an easy dollar, frequently produce a document which cannot withstand authenticity tests. In law enforcement, worthless cheques comprise the bulk of questioned documents.

Since the early history of the bank checking account system, the pen-wielding criminal commonly called the "cheque artist", has reaped a bountiful harvest. Estimates concerning the annual take seem to vary. However, the increasing drain upon honest business is not our primary interest. We are concerned with the crime itself, and the hidden cost to our citizens in investigating such matters. Many times, if not every time, the cost of investigation far exceeds the actual amount of the cheque.

There are other crimes of a more vicious nature as opposed to the cunning, surreptitious actions of the fraudulent cheque artist. He rarely does bodily harm to his victims, for such actions would defeat his objective. He is the aristocracy of crooks—a con-man, and he maintains a polished personality to further his schemes. Often, defending counsel will use his client's MO as a halo in final arguments when comparing his client with the more vicious criminals.

It is generally accepted that this type of crime is on the increase, and in an effort to combat this ever growing problem, major law enforcement agencies are equipping themselves with facilities to aid in quicker identifications and apprehensions of these elusive criminals. An important step in this direction has been the establishment of fraudulent cheque files, which in some measure, keep abreast with the fraudulent cheque artist. While fraudulent cheque files are not the answer to the problem, they do provide valuable aid to the investigator confronted with fraudulent cheque cases.

In 1937, approximately 25-30 worthless cheques were being submitted to the Indiana State Police Laboratory each month, for photographic reproduction purposes. Copies of these cheques were filed as a matter of record. Confronted with the increase of fraudulent cheque cases, we decided to review the old cases and take the handwriting or cheques out of the file folders and place them on blank 8 x 8 cards together with descriptions and MOs. This was the beginning of an unofficial cheque file, and for obvious reasons, it was cloaked with some secrecy. Its unveiling came later when a lumber company was burglarized and a book of 200 cheques was stolen. For five months the burglar remained unknown and was at liberty to sow the stolen cheques as wheat. A number of the cheques were submitted to the laboratory for photographic reproduction and filing. A short time later, while reviewing the signatures on fingerprint cards of new commitments received from the Indiana State Prison, a similarity in the handwriting was observed in one of the signatures. The

writing on the card was pitted against the cheques on file. In a matter of minutes the signature was definitely identified with the cheques which had been stolen from the lumber company. An interview with the inmate at the prison resulted in a confession to the burglary. This, what appeared to be an amazing identification to the inexperienced in handwriting identification, resulted in an official Fraudulent Cheque File.

Since that time over 3,000 handwriting specimens of individual worthless cheque passers have been received and placed into this file. Approximately two-thirds of the specimens on record have been identified. The filing system for the cheque file was changed from the 8 x 8 cards to the Acme Visible Cabinet system. These cabinets consist of 15 pullout trays per cabinet. There are 70 $4\frac{1}{4}''$ x 8″ acetate visible pockets hinged into each tray. Each pocket will comfortably support 30 original cheques.

Upon receipt of a cheque for comparison with the file, a case number is assigned on a complaint form in duplicate recording all pertinent information. The original copy is forwarded to the Central Records Bureau. The duplicate copy remains in the Document Section until a reply has been sent to the complainant. After establishing an ISP case number, the cards in our name index, bearing similar names used on the cheque are pulled, and the handwriting of the individuals is compared to that on the cheque. Some identifications are made immediately. If not, in cases of rather uncommon spellings and names, fingerprint cards bearing the same spellings and names, are pulled, and the signatures thereon compared to the cheque. Many identifications are made in this manner. If all name searches fail, and there are no suspects in the case, the cheque is then forwarded to the photographic laboratory for photo reproduction. Two copies are made, one for the cheque file and one to be forwarded to the National Fraudulent Cheque File.

Upon completion of the photocopies, the original and copies are returned to the Document Section. The originals are placed in transparent protective envelopes on the examination board to be compared with the file. Each cheque is compared to each specimen in the file, as experience has taught us that no classification system is thoroughly reliable. Cheque artists who vary to three or four methods of arrangement could easily be missed, if we had our file broken into classifications, therefore, we find filing the cheques in numerical and date order just as effective in gaining identifications. The file is not the least bit complicated, and no claim is being made here that it is superior to any other worthless cheque filing system.

After all possible efforts have been made, from the standpoint of the Document Section, to identify the writers and passers of the worthless cheques submitted, negative and positive reports are sent to each complainant concerning his case.

We maintain a cross reference card index on each worthless cheque received. The card index records the subject's name, aliases, and all case numbers pertaining to his cheque passing activities. Law enforcement circulars received from other States are carefully scrutinized for names and MOs for possible consolidation with cheques which have been passed in Indiana.

I have covered the Indiana State Police Fraudulent Cheque File very simply, as it is a very simple operation, but it is extremely efficient. There is a greater expenditure of time and work involved without a classification system, but a smaller chance of missing an identification. The file is available to any law enforcement agency desiring information.

In the last two decades, great strides have been taken by police personnel engaged in the profession of Questioned Document Examinations. One of the

advances has been in matters pertaining to worthless cheques, however, if it were possible to eliminate every cheque passer tomorrow, a document examiner would maintain his position in the investigation field, as the importance of this profession in law enforcement has been proven time and time again, and is now a well-established profession and an important branch of police laboratory science. While the establishment of cheque files and the forming of cheque squads aid in the investigation of such matters, it does not solve the problem.

Crime prevention and law enforcement are correlative. Just as it is important to enforce the law so is it important to establish preventive measures. As long as I have been a Questioned Document Examiner, it has been my ambition to bring about a change to suppress the worthless cheque passer. It appears to be an unending battle against this type of offender, but I firmly believe that the crime of forgery and the passing of worthless cheques can be greatly suppressed.

There is an ancient proverb, "A Fool and his money are soon parted". It would be unwise to say that our merchants are fools, but we can say that they are destitute of reason when they cash cheques for strangers. Law enforcement agencies are inclined to criticize merchants when they cash worthless cheques. At times, the criticism is justified, but we must remember that the unsuspecting merchant is dealing with confidence men!

A number of suppressing methods have been attempted. Educational programs, lectures before civic groups and newspaper articles warning the public about these criminals, have been unsuccessful. The placing of a fingerprint on cheques seemed to have a psychological effect on some offenders for a time, yet it was unsuccessful because the fingerprint was there and the cheque was still returned marked "no account". Photographs of these transient paper hangers are being taken every day. The merchants are not being protected by the camera any more than they were protected by the ink pad! Let's NOT make a racket out of a racket! Where does our problem begin? If all of these methods of prevention and others, have failed, is there a solution? There is one positive solution. Eliminate the present and future bank checking account system! Now, that is an absurd thought. Our business depends upon a checking account system for the exchange of money. We can, however, request the co-operation of banking institutions to curtail the availability of blank cheques. By making it as difficult as possible for the unscrupulous to obtain blank cheques, we can discourage the novice.

Restrictions placed on obtaining blank cheque forms will not stop the experienced cheque artist but an analyzation by banking institutions, of the present depositing system, might result in a modified depositing system which would further complicate obtaining blank cheque forms. Banking institutions will not experience a financial loss as the result of any modification which would safeguard legitimate business. By curtailing the availability of blank cheques we force the persistent cheque artist to seek other avenues of procurement. He may take one of three roads: (1) theft of printed cheques; (2) acquire the services of an established printer or (3) purchase printing supplies for his own use. Two of these avenues can be blocked by legislation and the other can be safeguarded by extra preventive measures. Cheque forms in Indiana are as plentiful as palm leaves in Florida. Take away the accessibility of cheque forms and there will be an immediate recession in fraudulent cheque cases. With full co-operation from banking institutions, I invite your attention to the possibilities of a solution:

Legislation—

(1) prohibiting printers from printing cheque forms except for banking institutions;

(2) requiring banks to be the only outlet for cheque forms;
(3) requiring each cheque be marked with some type of identification mark, such as a number, and a record be maintained of issuance;
(4) making it unlawful for any business establishment, with the exception of banks, to furnish any individual with blank cheques, or to carelessly display cheque forms to the public; and
(5) prohibiting the sale of safety paper except to authorized printers.

These are but a few suggestions, but they are fruit for thought. No method or precaution will completely stamp out this offense, but any suppression to the present problem, will be a great advancement in the protection of our citizens.

Discussion of D/Sgt. Schroeder's Paper

Cpl. HEAD: We have been reading, up here in Canada, that there are many of the larger stores now in the United States where you present a cheque and they take your picture with the cheque. Are there any actually doing that now throughout the States?

D/Sgt. SCHROEDER: Well, I have heard of a number of companies having that system, although it is not a standard procedure. There are photographs taken of these people along with the cheques and the cheque still comes back marked "No Account". It may be helpful in investigating such matters providing the officer has a photograph. It is the same as the fingerprint system. For a while it seemed to do some good. I remember in 1937 and 1938 they had a campaign requiring all the merchants to fingerprint those presenting any cheques. It didn't stop the worthless cheque business. They still came in. We had one experience where one cheque passer demanded and insisted upon his thumb print being taken over his signature. That would safeguard his own account. It was A. Smith, the weather reporter. It wasn't identified through his fingerprints, it was identified through his handwriting. When we caught him, he expected to be caught. Just one politic step in pulling his confidence game—in selling this cheque to the merchants, by demanding or insisting that he put his stamp of confidence upon this cheque.

Cpl. HEAD: You could take him out of circulation for awhile—if he is put away he just can't be passing bad cheques.

D/Sgt. SCHROEDER: The system is good; the program is fine; so is the fingerprint, but does that catch him any quicker than the handwriting does? Does it stop him? It will stop him for a year or two as long as he is in gaol, but more often than not he continues on passing his cheques. That isn't getting down to the problem. It is just like locking the barn after the horse has been stolen. Just go to your banks. I have the co-operation to a certain extent from the Indiana bank of the association. I have told them something about this plan. I haven't told them completely but they are very much interested. Here, for example, I have a copy of a report from the Banker's Association, published in April, 1955, and talking about the problems of bad cheques,—they had it captioned "Bad Cheques on the Increase"—it says during the latter part of December, 1954, they sent out a questionnaire to all Indiana banks requesting information on bad cheques. We did this because retail merchants of all kinds—restaurants, hotels and banks—were advising us that bad cheques of all types were on the increase. We received replies from 175 banks in 90 counties in Indiana and I think the collaboration of the results of this survey which are shown below will further prove that bad cheques are definitely on the increase. The figures in the chart below show that

166 banks reported that a total number of 1,367 "no account" cheques were presented to the banks during the month of November, 1954—one month, that is a small figure for Indiana compared to a territory like New York or Chicago—they might have that every day, I don't know; but that is 1,367 "no account" cheques in ONE month. There are 26,122 "N.S.F." cheques, so either we have been doing very little or what we are doing is not getting down to the problem. We are not stopping the thing; we have volumes of files; we can hire forty more men to do that. Mind you the only persons in my office are myself and a girl; but departments like the F.B.I. can put in 100 more men, put in more files. Still you are not stopping this thing; and that is the difficult job to do; we have to get behind these banks; it is a matter of co-operation.

Sgt. DUXBURY: Is it not a fact that England does not have this problem of bad cheques? I believe that is the case or was the case a few years ago. If that is the case, it would appear that the the business administration of the handling of this medium of exchange is at fault.

D/Sgt. SCHROEDER: It is either that or probably the bank cheques are not so easily available.

Sgt. DUXBURY: Yes, that is it.

D/Sgt. SCHROEDER: We talk about the work of cheque passers; we talk about the cheque artist—the true professional cheque artist is not so much our problem. He makes his money all right but it is these hundreds and hundreds of little fellows, the novices, who go around the little avenues, stop at a filling station, see a pad of cheques lying on the desk of the station attendant. They pick up the pad or tear off four or five of them; they can go into banks and stuff their pockets full of blank cheques. This should be stopped and these people compelled to go to the teller—it would be more difficult and certainly would be discouraging to a lot of these people.

Sgt. DUXBURY: Yes, but in doing that they are defeating the purpose of the usage of cheques, are they not?

D/Sgt. SCHROEDER: It is worth checking a little bit.

Sgt. DUXBURY: But the public would be opposed to any restriction on their use of cheques—that would be the problem.

D/Sgt. SCHROEDER: I do not believe that the honest person has any reason to object—to object to anything that will safeguard his account at the bank. If you have money in the bank there is no reason why you should feel offended, if the bank clerk takes a little more precaution.

S/Sgt. EVES: It is more a matter of convenience, I think, as far as the economy is concerned. I believe the point that Sgt. Duxbury was making is that our economy is based on the chequing system which is quite free and the people are quite used to it. In England they are not used to that type of economy. Most of their transactions are cash and rations. I think anyone who has ever tried to cash a cheque in England would be impressed right away with the difference in the way they pay off as compared to Canada and the United States. I think it would be quite difficult, really, to change it; the people wouldn't. Comparatively speaking, I believe the number of fraudulent cheques is a very small amount compared to the total volume of cheques passed and I think that the general public would feel that it would outweigh the advantage.

D/Sgt. SCHROEDER: It wouldn't make any change in the present system.

S/Sgt. EVES: But the system that they have in England, as far as I can see, is pretty well precisely what you outlined there in your recommendations.

D/Sgt. SCHROEDER: I was speaking to Mr. Brohier who mentioned that in Ceylon a card is signed by the depositor, when he opens an account and this signature is compared with that on any cheque he may present. When he opens an account he receives a cheque book containing 25 or 50 cheques for which he gives a receipt; each cheque is numbered by the Bank with a printed number so that the depositor gets a block of cheques, e.g. 123450-123500 and some other depositor gets the next block of 50 cheques. Before a dud cheque is passed the cheque leaf will first have to be stolen and these precautions reduce to some extent the passing of dud cheques.

Lt. PURTELL: Going along with S/Sgt. Eves in the restricting of economy in the amount of cheques passed in relation to the number of bad cheques—an example is in the City of Chicago where we have the fifth largest bank in the United States—the First National Bank of Chicago; the Continental Illinois Bank is the sixth largest bank. The Continental Illinois Bank handles one million pieces of paper a day. The amount of bad paper is a slight proportion and along with D/Sgt. Schroeder's remarks, Continental also numbers all their cheques. To get a cheque book you have to sign a receipt. It still does not cut out bad cheques, but, the Continental Illinois has the lowest amount of bad paper. There is still the problem of people printing cheques—fraudulent cheques on Continental; also firms being burglarized, strictly for the cheque books and cheque writers. You can't set up any procedure to stop either one of those. It is strictly up to the business man to watch his money.

D/Sgt. SCHROEDER: An attempt can be made to stop many of those things. There have always been police departments which take the attitude that they are here, they have been here for years and all we can do is go along with them. You can't step on anybody's toes. I think it is just as much our business to prevent crime as it is to report the loss. We have to get together on the thing. If we only cut down one-quarter we are getting somewhere. It can be done. I was talking to a man from Cuba some time ago. They had the same system as Mr. Brohier was telling us they had in Ceylon—the numbering system—but he was surprised to know that in Indiana or in this country we can go to a bank, a department store or a dime store and buy a pad of cheques; or go to the bank and on every counter there is all you want, all you need—you just fill your pockets with them. There are other banks that help us in our cheque cases. Of course, you have the professional man, but if you can eliminate all these novices and just work with the professional man you won't have much trouble. We are going to try it in Indiana and I will let you know about it.

S/Sgt. EVES: Thank you very much, D/Sgt. Schroeder.

The Fraudulent Cheque Section

BY

A. F. WILCOX, Sgt.,
Fraudulent Cheque Section,
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Ottawa

The Fraudulent Cheque Section was established in the Document Examination Section of the Crime Detection Laboratories Ottawa in 1944, as the Central Document Filing System. For the reasons of accessibility to fingerprint files of the Main Bureau of the Identification Branch, the modus operandi files of the Crime Index Section and the files of the Central Registry, this section was transferred in 1950 from the Crime Detection Laboratory to the Identification Branch H.Q., R.C.M.P., Ottawa, where it is still maintained. In 1956, the name of the Section was changed from the Central Document Filing System to the Fraudulent Cheques Section.

The Fraudulent Cheque Section operates as a central clearing-house for all of Canada of those cheques which are fraudulent through being written or altered by a cheque passer. All available information on these persons is centralized in this Section, which is a part of the Crime Index Section of the Identification Branch. A photographic record of the documents which are the products of known or unknown fraudulent cheque passers, writers of anonymous, threatening, obscene or crank letters is also maintained.

The Fraudulent Cheque Section is one of the National Police Services of the R.C.M.P. which is extended to all police Forces of Canada and all Federal Government departments. It is also international in character, co-operating with police Forces outside of Canada and with the International Criminal Police Commission.

The purpose of this Section is to connect by means of document examination the documents submitted with persons having fingerprint files and/or to material previously forwarded for identification. Assistance is thereby rendered to contributors by supplying them with investigative leads.

Whenever possible, the photograph, together with description, of the cheque passer identified through his handwriting is sent to the police department who submitted the cheque. In the event the handwriting on the cheque can not be identified to a fingerprint file, photographic copies of the document are retained in the Fraudulent Cheque Section where they remain until identified, or until the contributor advises no further action is required. When an unidentified cheque subsequently is linked with a person having a fingerprint file, the photograph, description and whereabouts of the passer is sent to the contributor. When an unidentified document is associated with another document whose author has not been linked to a fingerprint file, each contributor is notified of the author's field of activity.

Comparisons of the questioned handwritings on the exhibit(s) submitted are made with:

(*a*) the known signature of a person as appearing on his fingerprint file;
(*b*) the writings on previously submitted documents attributed to the suspected persons;
(*c*) the specimen writings of the suspect persons obtained from other sources.

These writings form the basis of the standards or exemplars from which we must conduct our examinations and comparisons. In view of their nature they can not be proven in court to have been written by the purported author, consequently any information supplied by the Fraudulent Cheque Section, no matter how positive the identification may be, can only be taken as an investigative lead rather than as findings for court purposes. This is the line of demarcation which separates the Fraudulent Cheque Section from the Document Examination Section of the Crime Detection Laboratory and allows for such great assistance to be given to the various Police Departments throughout Canada. Some of the writings which we use to establish the identity of author are inadmissible in evidence. Some come from a confidential source and could never be used for any court proceeding.

The function of the Fraudulent Cheque Section, in respect to the document, ceases with the notification to the contributor of the identity, photograph and description of the cheque passer and the return of the exhibit, if submitted. Upon the apprehension of the suspect and *after* it has been decided that a handwriting comparison for court purposes is required, the police department concerned must then proceed as if no examination had ever been conducted and must submit the questioned document together with collected and/or requested writings to the Document Examination Section of either laboratory for an independent examination.

It has been found that such follow-up examinations are quite infrequent as the cheque passer when apprehended admits to all the cheques which he passed. One cheque passer recently arrested readily admitted passing 102 cheques in Canada from British Columbia to Nova Scotia.

The Fraudulent Cheque Section is primarily concerned with the determination of the whereabouts of the "fly-by-nights", the itinerant cheque passer, the operator who moves quickly from place to place making his living principally through bad cheques. It is only mildly concerned with the occasional or local cheque passer. It is not, at the present, interested in the mail box thief, principally because there is no known method of classifying or filing forged signatures of genuine persons.

The Fraudulent Cheque Section maintains two separate files:

(*a*) *The Fraudulent Cheque File*—deals principally with bogus cheques but not with those which are genuine other than for a forged endorsement.

Definition: Bogus Cheque—a general term used to denote the many types of worthless cheques, including those based on no-accounts, fictitious amounts or names, insufficient funds, or forged and altered signatures.

The following types of document also come under this file—

(i) writings in connection with frauds;
(ii) fraudulent postal or express money orders;
(iii) fraudulent cash grain tickets;
(iv) fraudulent poultry tickets;
(v) raised negotiable instruments;
(vi) any other writings of cheque passers not included above but which might assist in any subsequent identification of the passer or writer.

(*b*) *The Anonymous and Questioned Writings File*—deals with the classification and filing of anonymous, cranks, threatening and extortion letters. It also includes notes handed to tellers during hold-ups, notes left at scenes of a crime, writings of a subversive nature.

The Fraudulent Cheque Section has grown considerably since its inception. Today there are approximately 20,000 cheques on file. The following table illustrates the number of cheques received annually:

1944-1949	1500
1950	1249
1951	2754
1952	2822
1953	2877
1954	3410
1955	3987

These 20,000 cheques on file represent the work of approximately 6,000 authors.

3,400 being active cheque passers with fingerprint files;
1,500 being inactive cheque passers with fingerprint files;
1,100 being unidentified cheque passers.

The Fraudulent Cheque File contains specimen handwritings, of cheque passers. This file utilizes an extensive cross-reference system so that individual characteristic features of each author may be recorded in several places. The Fraudulent Cheque File has twelve sections:

1. Handwritten Main Cheque File (Male)
   (*a*) Known
   (*b*) Unknown
2. Typewritten File
3. Cheque Writer File
4. Rubber Stamp File
5. Handprinted File
6. Female File (Known and Unknown)
7. Alphabetical Name Index File (Handwritten)
8. Criminal Name Index File
9. Confidence Men File
10. Company Name Index File
11. B. E. & T. File
12. Master Cheque File

These sections as of March 1st, 1956 contain the following number of cards:

1. Handwritten Main Cheque File	
(*a*) Known	2545
(*b*) Unknown	900
2. Typewritten File	350
3. Cheque Writer File	125
4. Rubber Stamp File	225
5. Handprinted File	116
6. Female File	
(*a*) Known	1280
(*b*) Unknown	380
7. Alphabetical Name Index File	9650
8. Criminal Name Index File	
(*a*) Known	14,400
(*b*) Unknown	1600
9. Confidence Man File	210
10. Company Name Index File	1200
11. B. E. & T. File	160
12. Master Cheque File	20,000

Handwritten Main Cheque File—contains photographic copies of each male author's writings. The number of prints filed is governed by the author's range of variation. This file is subdivided into:

(*a*) the district in which the passer operates;

(*b*) the age of the passer.

Typewritten File—contains photographic copies of typewritten cheques and illustrates the passer's method of completion. The typewriten portion must be typed by the passer to be eligible for inclusion in this file. It also contains sufficient representative portion of the passer's handwriting to permit the suggestion of possible authorship.

The Cheque Writer File—NOTE: A cheque writer is a machine used to print the dollar amount on the cheque. A cheque protector is an accessory to a cheque writer. A cheque protector perforates the payee and sometimes the amount line.

This file contains photographic copies of standards which can be used to identify the machine as to make and model and also contains photographic copies of each cheque writer used by cheque passers. The latter type bears representative writings of the passer sufficient to enable suggestion of possible authorship of any writings compared with it. This File is a method search as well as an actual search.

The Rubber Stamp File—contains photographic copies of rubber stamps currently utilized by the cheque passer, e.g.:

(*a*) Bank Acceptance rubber stamp (made for the passer by some rubber stamp company).

(*b*) Company Name stamp stolen from a legitimate source by passer(s) or associate(s).

(*c*) Rubber Stamp unit purchased, and/or stolen by passer(s) or associate(s).

The Handprinted File—contains photographic copies of cheques of which the body was completely handprinted and the signature of the payer handwritten.

The Female File—contains photographic copies of each female author's handwritings. The same principles which govern the filing in the Main Cheque File apply here.

The Alphabetical Name Index File—contains photographic copies of every written name used by the cheque passer for his own gain. Every name used by the passer as payer is filed. The payee names are filed when the endorser signatures are written by the cheque passer.

The Criminal Name Index File—contains on typewritten cards *all* names and aliases used by the cheque passer.

The Master Cheque File—contains *all* the writings of each cheque passer filed separately as individual authors; i.e., each master file envelope will contain specimen writings of the author obtained from cheques, documents, letters, requested writings, collected writings, signatures from fingerprint forms, etc. These writings may be in the form of originals or photographic copies. In addition to the writings of the author, the Master File envelope contains his dossier, description, modus operandi, on a typewritten card. The Master Cheque File is the hub around which the Fraudulent Cheque Section revolves.

Every author is given a separate number and cross-referenced, whenever possible, to a fingerprint file. Every photographic copy filed in any of the Fraudulent Cheque Sections bears the author's Fraudulent Cheque Section number.

The B. E. and T. File—contains photographic copies of cash purchase grain tickets, money orders, negotiable instruments of any sort, which were stolen in blank and completed by the culprit and/or associates. These are filed according to the location of the crime.

The Confidence Men File—contains photographic copies of writings of those persons involved in the following rackets:—

(*a*) Chimney and roofing repairs;
(*b*) Bank or Income Tax Inspectors;
(*c*) Card sharps (1) trains, ships; (2) hotel rooms;
(*d*) Race track frauds;
(*e*) answering ads for goods;
(*f*) Marriage;
(*g*) Salesmen, e.g., subscription, insurance, wearever, oil shares;
(*h*) Non-payment hotel rooms;
(*i*) Miscellaneous.

The Company Name Index File—is composed of typewritten cards showing all company names by passers whether rubber stamp, typewritten, handwritten or printed, and also showing the names of companies from which cheque blanks have been stolen, whether completed on or off the premises by the culprit.

The photographic copies filed in the Fraudulent Cheque File do not remain there indefinitely. In the case of unidentified cheques, they remain in the system until this office is advised the case is definitely concluded. These unknowns are reviewed once a year and researched if necessary. A more complicated system in regard to known authors has been set up. These authors are broken down into four categories:

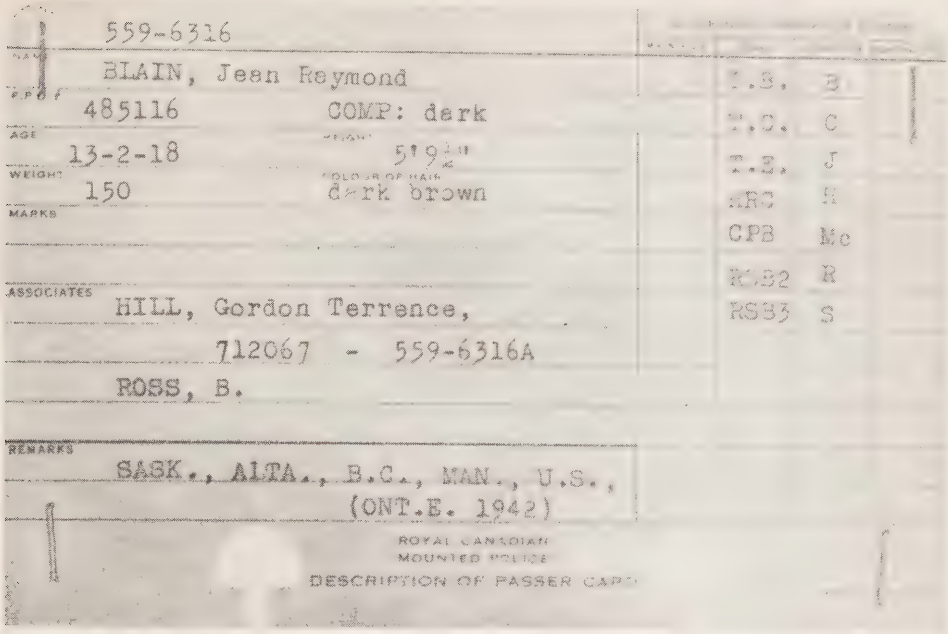
(*a*) Those persons who have been only convicted *once* for false pretences, fraud, etc., and who have used their right name;
(*b*) Those persons who have been only convicted *once* for false pretences, fraud, etc., but who have *not* used their right name;
(*c*) Those persons who have been convicted *more than once* and have used their right name each time;
(*d*) Those persons who have been convicted *more than once* but who have used innumerable aliases.

(*a*) and (*c*) are not filed in the Main Cheque File, only in the Criminal Name and Alphabetical Sections, and also may be filed in any other file. (*b*) has an expiry period of three years and (*d*) an expiry period of five years.

Each passer is reviewed upon his date of expiration and should he have remained inactive during the period he was filed, all his cards, with the exception of his Criminal Name and Alphabetical (or alias) Cards which have a ten year expiry period, are removed from the collection. A cheque passer is considered inactive:

(*a*) if he has never passed or uttered a cheque during the time allotted him. (1, 3 or 5 years);
(*b*) if he has not been arrested or served a term of imprisonment for cheque passing or allied activity;
(*c*) if he is not "Wanted" for false pretences or allied activity.

The following types of cards are used in the Fraudulent Cheque File.



559-6316

BLAIN, Jean Raymond

485116 COMP: dark

13-2-18 5'9½"

150 dark brown

MARKS

ASSOCIATES

HILL, Gordon Terrence,

712067 - 559-6316A

ROSS, B.

REMARKS

SASK., ALTA., B.C., MAN., U.S.,

(ONT.E. 1942)

ROYAL CANADIAN MOUNTED POLICE

DESCRIPTION OF PASSER CARD

T.B. B

T.C. C

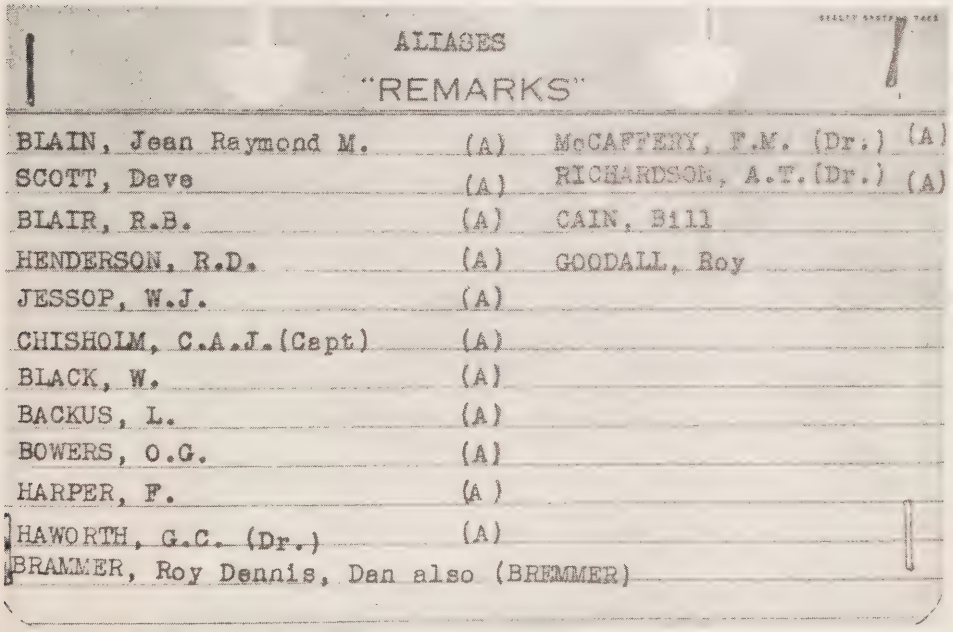
T.E. J

CPB Mc

RCB2 R

RSB3 S

PRINCIPAL MASTER



ALIASES

"REMARKS"

BLAIN, Jean Raymond M.	(A)	McCAFFERY, F.M. (Dr.)	(A)
SCOTT, Dave	(A)	RICHARDSON, A.T.(Dr.)	(A)
BLAIR, R.B.	(A)	CAIN, Bill	
HENDERSON, R.D.	(A)	GOODALL, Roy	
JESSOP, W.J.	(A)		
CHISHOLM, C.A.J.(Capt)	(A)		
BLACK, W.	(A)		
BACKUS, L.	(A)		
BOWERS, O.G.	(A)		
HARPER, F.	(A)		
HAWORTH, G.C. (Dr.)	(A)		

BRAMMER, Roy Dennis, Dan also (BREMMER)

PRINCIPAL MASTER

F.P.S. [illegible] FCDS NO. 559-6316		Where Filed
NAME: [illegible] Jean Reymond	MARKS:	B R.F.
AGE: 13-2-18 COMP: dark		C R.C.
HEIGHT: 5'9½" WEIGHT: 150		J R.C.
HAIR: dark brown EYES: brown		H R.R.C.
		Mc R.S.M.P.
		R CPR(P & E)
		S HRC

REMARKS:

ASSOCIATES: HILL, Gordon Terrence, 712367 - 559-6316A

PROV. FREQUENTED YUKON, ALTA., B.C., MAN., U.S. (APR. 1942)

ALIASES & COMPANY NAMES LISTED ON REVERSE

SEARCHER JP EXPIRY DATE April/44

TEMPORARY PRINCIPAL MASTER

BLAIN, Jean Raymond M. (A)
SCOTT, Dave (A)
BLAIR, R.B. (A)
HENDERSON, R.D. (A)
JESSOP, W.J. (A)
CHISHOLM, C.A.J. (Capt) (A)
BLACK, W. (A)
BACKUS, L. (A)
BOWERS, O.G. (A)
HARPER, F. (A)
HAWORTH, G.C. (Dr.) (A)
McCAFFERY, F.M. (Dr.) (A)
RICHARDSON, A.T. (Dr.) (A)
BRAMMER, Roy Dennis, Dan also (BREMMER)
CAIN, Bill
GODDAIL, Roy

FRAUDULENT COMPANY NAMES CARDS:

GRANITE HOTEL
CAN.W. RSB 1955

HARPER'S TIRE SERVICE
CAN.W. RSB 1955

BACKUS GARAGE
CAN.W. RSB-1 1955

ST. JAMES HOTEL
CAN.W. RSB-3 1955

HENDERSON DECORATORS
CAN.W. FCN 1955

BOWER'S HARDWARE
CAN.W. RSB-3 1955

TEMPORARY PRINCIPAL MASTER
(Reverse face)

1X
1

N55D-707-H-1
559-6316

BLAIN, Jean Raymond, 435116

Typewriter A, Elite.

D. Scott

Calgary, Alta. November 21st 1955 No. 491

Imperial Bank of Canada

17
10

MAIN OFFICE - 8TH AVE. & CENTRE ST

Pay to the order of D. Scott $ 41.20

FORTY-ONE DOLLARS AND TWENTY CENTS ONLY Dollars

F. Harper.

HARPER'S TIRE SERVICE LTD
~~130 - 12th AVENUE WEST~~
CALGARY. Ph: 27878 - 27231

62

CAN. W 559 6316

Chilliwack, B.C. Jan 28 1956. No

To the Bank of Montreal

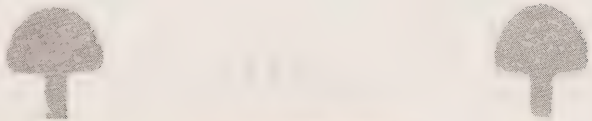
THIS ITEM MUST NOT BE CLEARED AGAIN UNLESS CERTIFIED.

1/705

Pay to the order of Commercial Hotel $4.65

Four 65/100 Dollars.

2652 R. Blanie.



MAIN CHEQUE FILE

MAIN CHEQUE FILE

Different coloured cards are used for filing in this section.

Known male	—white
Known female	—yellow
Unknown male	—blue
Unknown female	—salmon

"Known" is taken to mean that the author has been associated with a fingerprint file.

TB

5596316

Swift Current, Sask. August 31st 19 55 No. 242

The Royal Bank of Canada

11
1219

SWIFT CURRENT BRANCH

PAY TO
THE ORDER OF

Dave Scott $41.40

EXACTLY FOURTY-ONE DOLLARS AND FOURTY CENTS ONLY Dollars

Credit on Invoices
7698B & 7834B

BACKUS GARAGE
L. Backus

Dave Scott

CAN W 1918

559 5516

THE BANK of NOVA SCOTIA 2 553

ST. JAMES BRANCH

PAY TO THE ORDER OF ST. JAMES, MAN. Jan. 31st 1956 No. 24

R. HENDERSON (DECORATORS) $ 60.00

THE SUM OF Sixty Dollars

Labour: Tile Flooring

C A Chisholm

ST JAMES HOTEL

559-5516(C) Printed in Canada

Henderson Decorators

R. Henderson

122 - Kirkbrook St

92-4120.

CANADA 1918

5596316

RS

Calgary, Alta November 21st 1955 No. 478

Imperial Bank of Canada

MAIN OFFICE - 8TH AVE & CENTRE ST

17
10

Pay to the order of D. Scott $41.20

FORTY-ONE DOLLARS AND TWENTY CENTS ONLY Dollars

E. Harper

HARPER'S TIRE SERVICE LTD.
139 - 33th AVENUE WEST
CALGARY.

IMPERIAL BANK OF CANADA HEAD OFFICE TORONTO

CAN W 1918

RUBBER STAMP FILE

Jean Blair, - 445116
12-2-12, 5'10", 150 lbs.
Dark brown hair, blue eyes.
Sell subscriptions for magazines.

Blair Jean 76

[redacted]

REGISTRATION C 835

Name J. Blair & B. Blair Date Jan 23/36

Street Address 712 - 7th -

City Sandpoint State or Prov. Idaho

559-6316

Jean BLAIN - 485116
1[illegible]-18, 5'10", 150 lbs.
Dark brown hair, limps.
Steals Rubber Stamps when proprietor occupied.

Dave Scott — Trent, Sask. August 31st 19 55 — No 242

The Royal Bank of Canada

11
1219

SWIFT CURRENT BRANCH

PAY TO
THE ORDER OF Dave Scott $41.40

FORTY-ONE DOLLARS AND FOURTY CENTS ONLY Dollars

Credit on Invoices
#7698B & 7834B

BACKUS GARAGE
L. Backus

B.E. & T. FILE

FCN 5596735

5596735 031

IMPERIAL BANK OF CANADA
COUNTER CHEQUE

May - 21 / 5 / 6a 49. 55

To Imperial Bank of Canada
NAME OF BANK
Niagara Falls
BRANCH

Pay to Paul Johnston or order $ 10 00
Ten 50/100 Dollars

To manager of King Shows John P Parent

559-6316

HARPER'S TIRE SERVICE, Calgary, Alta.
CAN. W. (1955)

RSB

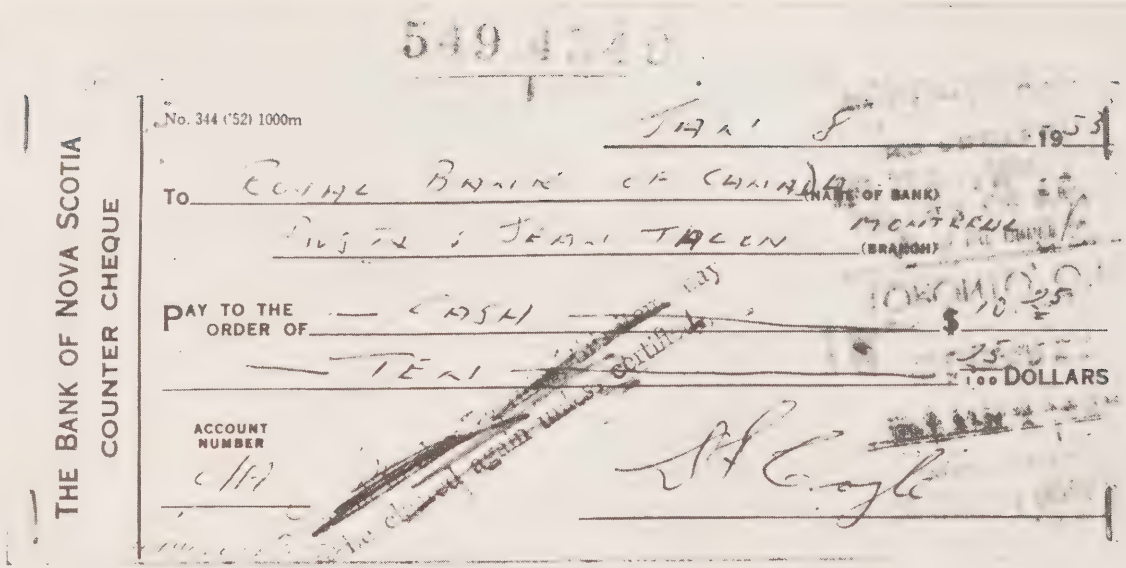
COMPANY NAME INDEX FILE

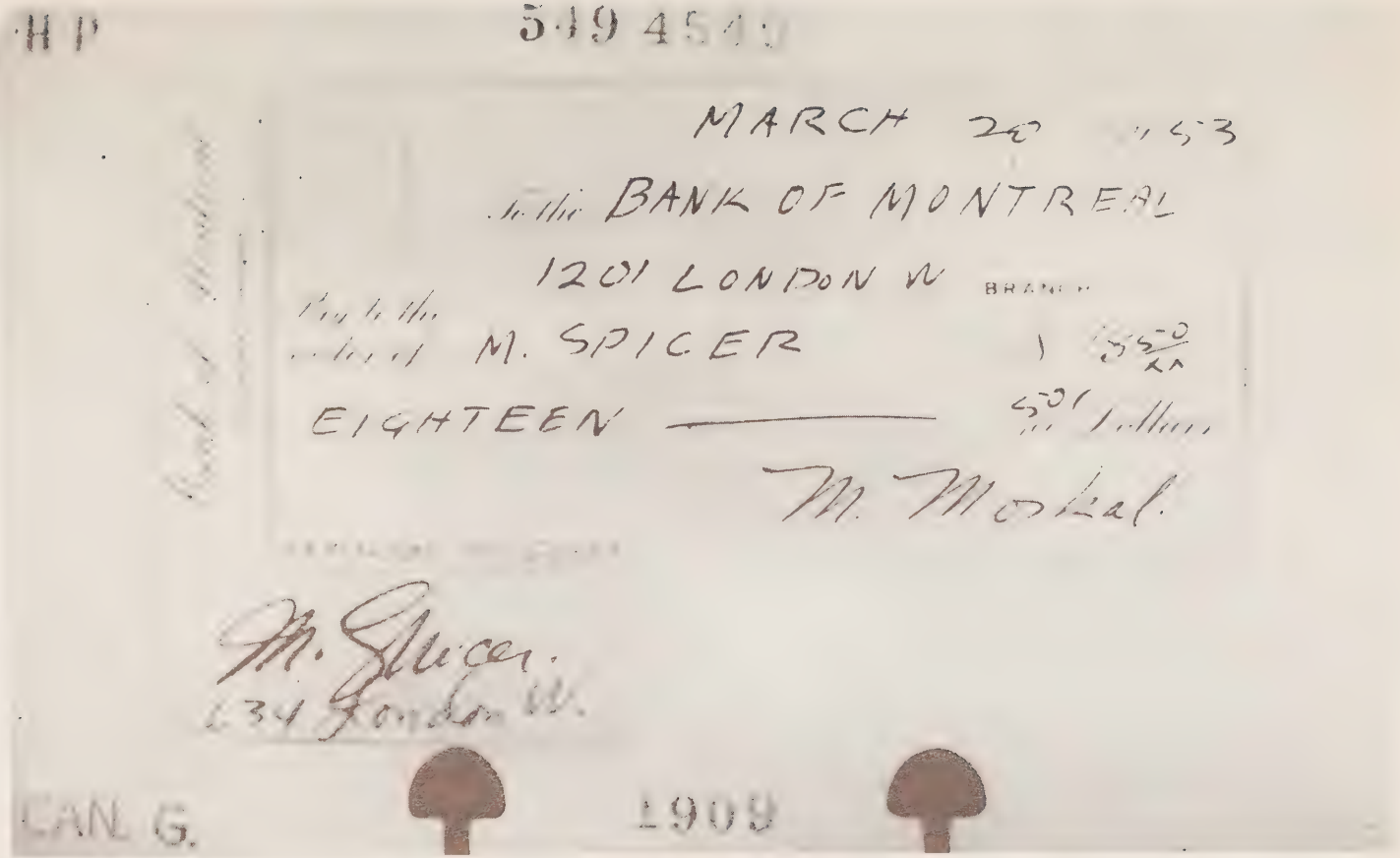
'JOHNSTON, Paul 559-6735 790011
CARNIVAL WORKER

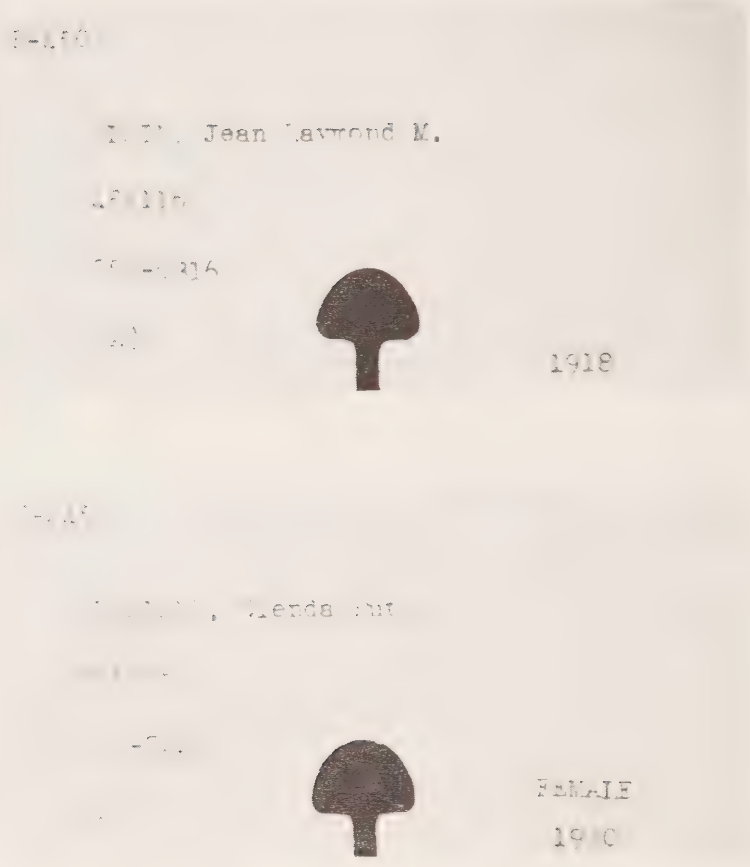
BRANCH
Paul Johnston — John Paul
Manager of King Snow

TALL,- 6'3",- 164 lbs.- ONT.E., QUE.

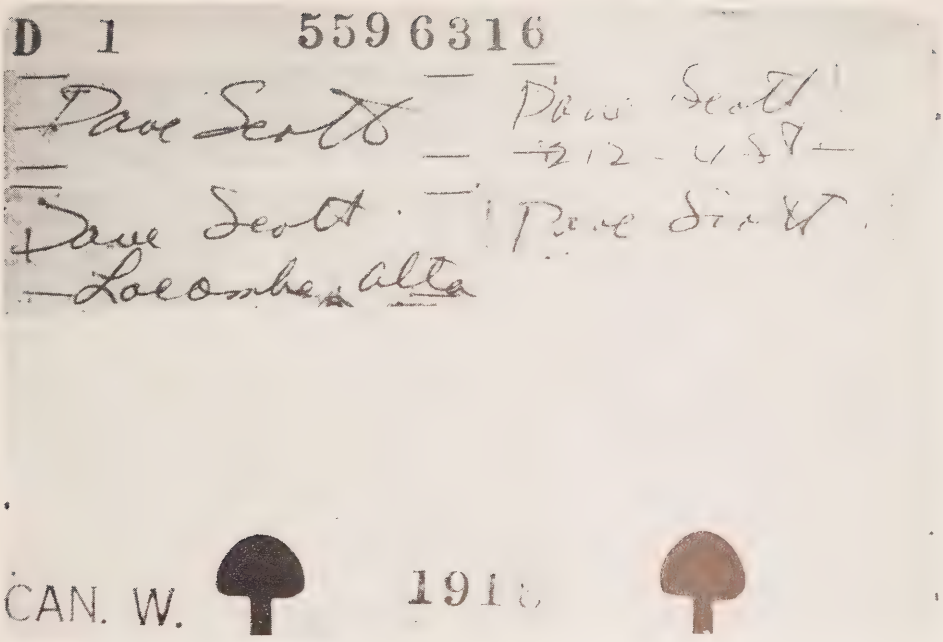
MODUS OPERANDI FILE


THE BANK OF NOVA SCOTIA
COUNTER CHEQUE
No. 344 ('52) 1000m
TO
(NAME OF BANK)
(BRANCH)
PAY TO THE ORDER OF
$
DOLLARS
ACCOUNT NUMBER

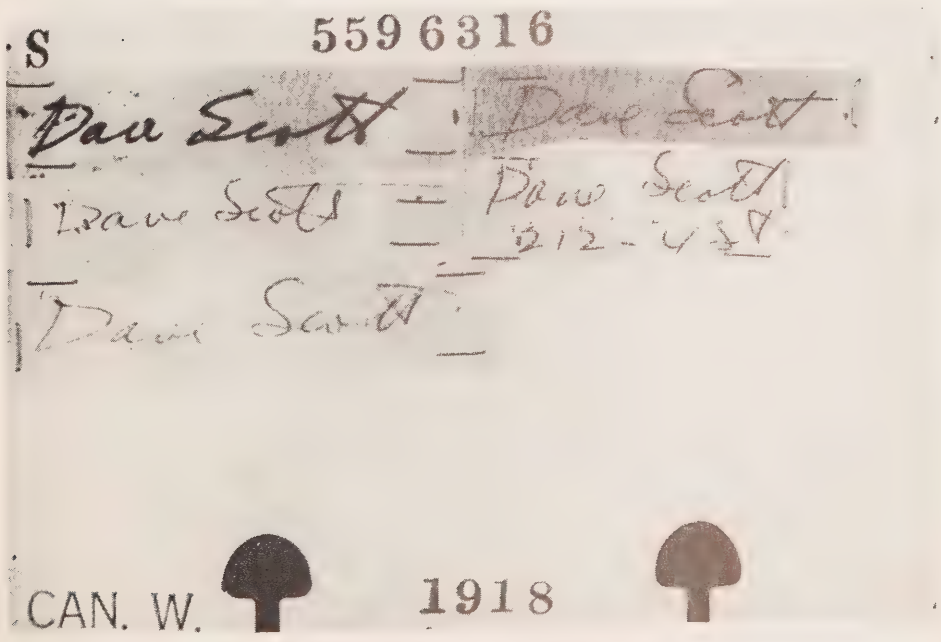




CRIMINAL NAME INDEX FILE



SPECIAL FILE



ALPHABETICAL NAME INDEX FILE

82384—6½

See pages 65-75 for samples of Cards, Cheques, etc.

To illustrate the function and operation of the Fraudulent Cheque File, let us take the case of Kenneth Labron, F.P.S. 785070, who was arrested for the first time by the Winnipeg City Police on October 9, 1953.

Kenneth Labron was born on April 16, 1913 at Vancouver and lived there most of his adult life. He was described upon his arrest as follows:

> 5′ 5½″; 125 pounds; short erect build; medium concave nose, brown eyes, wearing glasses; light brown hair; high straight forehead; oval face, with a mole left side of forehead.

In a Post Office Department circular dated February 6, 1952, it was noted that a person (or persons) by the use of fraudulent bank acceptance stamped cheques was defrauding the Post Office Department and business establishments in Vancouver and District. A request was made to the R.C.M.P. Headquarters in Victoria for either the cheques uttered by this person to be forwarded to the Fraudulent Cheque File for examination, or for photographic copies in the event the original documents were not available. Six photographs were forwarded by the Officer Commanding, Vancouver Sub/Division on April 7, 1952. These six photographs were searched through appropriate sections of the Fraudulent Cheque File—viz. the Typewritten File; the Rubber Stamp File and the Alphabetical Name Index File, but without success as to the identity of the author. It was noted that the typewriter used for portions of three of the photographs submitted was not a new machine and that several of the type faces were damaged rendering identification of subsequent material, typed on the same machine, relatively easy. The writings on the endorsements submitted were found to be of common authorship and possibly the same as the signature of the payer appearing on the three cheques.

As no identification of the handwritings was made by search of the Fraudulent Cheque File, photographic copies were filed in the appropriate sections of the Fraudulent Cheque File for future identification. The names used—"J. Dean" and "Peter Scott"—were filed in the Alphabetical Name Index.

On April 17, 1952, R.C.M.P. Detachment at Richmond, B.C. submitted a cheque bearing the name of the payer "Frank Fediuk" and the endorsement "Wm. S. Short".

This cheque was searched through the Fraudulent Cheque File. The typewritten portion of this cheque was found to have been made by the same machine used for those three cheques submitted by Vancouver Sub/Division; the cheque protector was noted to be of the same make and model. The handwritings of the endorsements were identified with the "Peter Scott" endorsements.

R.C.M.P. Detachments at Mailardville, B.C., and Cloverdale, B.C., submitted cheques to the Fraudulent Cheque File on April 21, and May 1, 1952, respectively. These two cheques were found to be similar to the one submitted by Richmond Detachment. Cloverdale, in addition to the cheque, forwarded the Bank Deposit Slip signed "Wm. S. Short" used by the passer.

On May 14, 1952, the R.C.M.P. Detachment at Port Coquitlam, B.C., submitted a cheque signed "Peter Scotter", a B.C. Operator's Licence signed "P. Scotter", a letter of introduction signed "E. E. Percy" and "Peter Scotter", and an indenture bearing the same signature.

The documents submitted were searched through appropriate sections of the Fraudulent Cheque File and it was found that the same typewriter was used for the cheques from Vancouver, Richmond, Maillardville and Cloverdale Detachments. The handwritten portions were also found to be of common authorship.

Victoria, Chilliwack, Burnaby, Winnipeg, Edmonton and Toronto City Police Departments forwarded cheques, bank deposit slips, F.E.C.B. Forms, U-Drive Rental Forms, calling cards, and $100 Canadian Pacific Express money orders.

From the documents submitted, it was established that the cheque passer had been using: two typewriters, one cheque writer, possibly three bank certification stamps, four other type bank stamps "O.S." and "O.S.C." and a rubber stamp printing set. Twenty-six of the cheques submitted and sixteen out of the nineteen other documents were linked together through the following examinations made by the staff of the Fraudulent Cheque File:

(1) handwriting,

(2) typewriting,

(3) rubber stamp impressions,

(4) cheque writer impressions.

After each new exhibit was received, the Fraudulent Cheque File was re-searched for some lead that would link the cheque passer to a fingerprint file but without success. All that could be established was that one person was committing all these offences.

In each of the eleven cases a description of the cheque passer was forwarded. There was a wide variance in the statistics quoted. For instance, heights varied from 5′ 6″ to 5′ 10″; weight from 130 to 165 pounds; hair from blonde to brown, etc. Though a description is a valuable identification medium, it is practically impossible to obtain an accurate one except under ideal conditions, such as when a subject is in custody.

Yet in this case, regardless of misleading descriptions, the Fraudulent Cheque Section indelibly linked all eleven cases to one individual.

On October 20, 1953, the Winnipeg City Police arrested one Kenneth Labron for attempting to pass cheques and submitted his fingerprints to the Bureau. Labron, a first offender, was the cheque passer sought for the aforementioned cheques. In his statement to the Winnipeg City Police, he admitted perpetrating all the offences. He was convicted and sentenced.

Although to the Winnipeg City Police goes the bulk of the credit for solving the "Labron" case, it is felt that the Fraudulent Cheque Section rendered great assistance as a complete report covering all the cheques had been submitted to them prior to Labron's arrest or identification. It is pointed out that had Labron been previously identified to a fingerprint file with known specimen exhibits in the Fraudulent Cheque File, his apprehension would in all probability have been much sooner, for the various police departments would have been advised of the true identity of the author and supplied with photograph and description.

The Labron case illustrates the function of the Fraudulent Cheque Section for documents such as cheques, bank deposit slips, calling cards, and letters of introduction. Whenever such documents are submitted for search they are photographed and these are retained on file for further search and comparison purposes. Every photographic copy retained is classified under either "Known Author", i.e., any person who can be identified to a fingerprint file, or under "Unknown Author".

It is also pointed out that every contributing police department was advised of every new cheque uttered by the cheque passer and where he was operating.

When a cheque is forwarded to the Fraudulent Cheque File together with a C-55, the following steps are taken:

(1) the cheque is marked for identification with the incoming C-55 (A criminal's description and modus operandi form).

(2) and then photographed. The endorsement face is photographed only when it bears writings of the passer;

(3) the C-55 is sent to Central Registry for the creation of a Headquarters File. All applicable names on the C-55 are checked through their extensive name index. All cross-references are noted on the file which is forwarded after being properly carded, etc., to:

(4) the Crime Index Section of the Identification Branch. Here all cross-references noted by Central Registry are drawn. Those applicable to the C-55 in question are kept. If the F.P.S. number of the author is not otherwise noted, the Criminal Name Index Section of the Identification Branch is then checked for persons with similar names who possess fingerprint files. Photographs and descriptions of the suspects thus found and those found from a Method Search of the Crime Index Sections are forwarded by the Crime Index Sections to the contributing police department. The complete file is then

(5) submitted to the Fraudulent Cheque File for attention and search. Upon receipt of the file, the handwritings of the suspects furnished by the Crime Index Section is compared with the questioned handwritings on the cheque or cheques. Should one of the suspects be previously filed in the Fraudulent Cheque File, the fingerprint file of that individual bears our Fraudulent Cheque Section Number. Thus, if the suspect is previously recorded in the Fraudulent Cheque File, a comparison can be made of all those writings on cheques and documents attributed to the suspect as well as those signatures appearing on fingerprint forms. If the suspect is not previously recorded, the examination has to be restricted to those signatures appearing on the Fingerprint File.

Should all the suspects furnished by the Crime Index Section be eliminated or not identified through limited amount of writings on the Fingerprint File, a search is conducted of the Fraudulent Cheque File. The search is governed by the Sections into which the cheque falls.

Upon identifying a cheque to an author with a Fingerprint File, it is then searched through the Unknown Author Section, in an attempt to identify one or more of these authors. Very often the writings on file of a known author are not illustrative of his true range of variation, and it is with additional specimens obtained through convictions or admissions that we are able to see the range of variation expanding—often to the point that a hitherto "eliminated" unknown is associated to the known writings.

Whenever the author is linked with the writings on the cheque in question, the police department is advised and if the photograph and description have not already been forwarded for identification, this information is contained in the report covering the results of examination and return of the exhibit.

When the search of the Fraudulent Cheque File and comparison of the fingerprint signatures of the suspects have proved negative, photographic copies of the cheque or cheques are retained in appropriate sections of the Fraudulent Cheque File. These copies remain there as "Unknown" until connected with a person possessing a fingerprint file when these are reclassified as "Known" or until the police department advises no further action need be taken, e.g., death of complainant, case withdrawn, etc.

The Route of Mail Through the Fraudulent Cheque Section

BY

JOAN PROUDMAN

Faudulent Cheque Section,
Identification Branch
R.C.M. Police,
Ottawa

The effectiveness of the Fraudulent Cheque Section in arriving at the identity of unknown authors of the questioned exhibits submitted for search, is greatly enhanced by the assistance of other sections at R.C.M. Police Headquarters. Many records, other than those of the Fraudulent Cheque Section are searched in order to locate possible suspects. A brief account of the procedure followed when a cheque or document of unknown authorship is received at this Headquarters seems the most effective means of illustrating the assistance rendered by other offices.

The Fraudulent Cheque Section receives questioned exhibits and accompanying reports from town and city police departments, R.C.M.P., provincial and other police forces throughout Canada and from the Federal Bureau of Investigation. Soon after they have been received, the exhibits are forwarded to the Photographic Section of Headquarters Division, in order that photographic copies may be made, to be retained on file, and the correspondence is forwarded to Central Registry. Central Registry is the central filing system for the whole of Headquarters Division. All correspondonce relating to each individual case is kept in a folder and assigned a specific code number so that it may be easily located whenever required. Such files are known as "C" Directorate case files.

In addition to providing a convenient large scale filing system, Central Registry maintains a record of names of all persons who are subject of any case file. All names mentioned in the new correspondence are checked against the master index and any identical names located are listed, with their file numbers, as cross references to the new file. Thus when the completed file is returned to the Fraudulent Cheque Section, all the cross referenced files are perused in search of suspects.

The correspondence with its list of cross references, is then assigned a number. A typical case file number would be *56 D 707-H 12*; in which the first number (56) indicates the year in which the file has been begun. The following letter (D or B) is the division letter assigned to Headquarters. The next number (707) indicates the class of the offence or file subject. The Fraudulent Cheque Section is primarily concerned with offences classified as follows:

Cases handled by the R.C.M.P. involving:	
False Pretences	705
Forgery and offences resembling forgery	707
Threatening letters	708
Assistance to other police forces	1180
Assistance to railway police	1187

The letter following the classification number indicates the location by province where the offence occurred. The province and other sources are assigned letters as follows:

Newfoundland	N
Prince Edward Island	A
Nova Scotia	B
New Brunswick	C
Quebec	D
Ontario	E
Manitoba	F
Saskatchewan	G
Alberta	H
British Columbia	J
F. B. I.	Q

The final number is necessary to distinguish the different cases.

After having been assigned a number and a folder, the file is routed to a typist pool where cards are prepared for the master index mentioned previously. Following this, at another office, a record is begun of the allocation of this specific file so that it may be located easily by the Central Registry Staff if the need arises. The file, at this stage is now completed, and hence is returned to the Crime Index Section.

The Crime Index Section is a national registry of crimes in which is recorded details concerning crimes of more than local importance, reported on by police forces throughout Canada and in some instances, the world. It is maintained as a means of tracing unsolved crimes to known criminals. This section consists of eleven indices of which the Fraudulent Cheque Section is one. The other sections include the Nominal, Deformities, Tattoo, Nicknames, Coloured Races, Wanted Persons, Doubtful Traders, Characteristic Peculiarities, Method and Dormant indices.

When the new Headquarters file is received by Crime Index Section, a name search is conducted for suspects who have used a name similar to the names employed by the file subject. Three separate files, Criminal Name Index and Nominal and Wanted Persons Indices are searched in this regard. The Criminal Name Index is maintained by the Fingerprint Section of the Identification Branch and includes all the names and aliases under which each criminal has been convicted and fingerprinted for any crime. The Nominal Index of Crime Index contains the names and all the aliases of selected known criminals whose modus operandi is recorded. While there is some duplication between these two files the Nominal Index is a newer file and does not include aliases used by criminals who have been inactive for quite a long period and who have not come to the attention of the Crime Index Section. Therefore to insure full effectiveness of a name search, both files are used. A search is made also, of the Wanted Persons Index which records the name and aliases employed by perpetrators of unsolved crimes and for whom warrants are held.

The Headquarters file, with the list of the suspects located by name searches is then forwarded to the Fraudulent Cheque Section. A comparison is made of the writings on the questioned exhibits with any available writings of the suspects suggested. Quite often a suspect located from the nominal search can be identified by the document examiners of the Fraudulent Cheque Section. In the event that no identification can be made, the appropriate sections of the cheque file are searched. A report advising of the results of the search, the original exhibits, and if the author has been located, his photograph and description, are then returned by registered mail to the contributor

and photographic copies of the exhibit are retained. A copy of the Fraudulent Cheque Section report is then placed on the Headquarters file. In the event of a negative search the files of any suspects who could not be eliminated through handwriting, together with the Headquarters file, are returned to Crime Index Section. There, the Method Index and any other appropriate indices are searched and new suspects located are forwarded to the Fraudulent Cheque Section. A brief account of the indices which might be searched illustrates their value.

The Method Index is a classification of the various methods of operation used by criminals. It is composed of the Regular Method Index which records particulars of crimes committed by known criminals, and the Wanted Method Index which classifies crimes for which a conviction has not yet been obtained. Each card filed in the Method Index contains the following information; the subject's physical description, name and aliases, associates, and his method of operation for a particular type of crime. Cards pertaining to similar crimes are filed together. There are classified, roughly twenty-three general types of crimes which, in turn, receive further "break-downs" if the size or complexity of the file warrants it. Each criminal on file is recorded in every appropriate section of the Method Index and thus a single criminal may be filed an almost unlimited number of times depending on his versatility.

The most frequently searched Method indices in connection with the work of the Fraudulent Cheque Section are the Forgery, Fraud, and the Breaking, Entering and Theft (B. E. & T.) Sections. The file on forgery is a classification of the various categories or types of documents forged, such as money orders or cash grain tickets, etc. The index concerning fraud is divided into five different subsections. The first records the character assumed by the criminal such as parson, teacher, chimney repair man and about seventy-five others. The second subsection concerns the type of person defrauded, for example a real estate agent, member of a service club, etc. Another section of this file deals with the means by which the criminal perpetrated the fraud whether by presenting an altered company cheque, or by selling non-existent subscriptions. There are roughly thirty "break-downs" on this file. Still another part of the fraud index deals with the type of property obtained, for example clothing, drugs or jewelry, etc., and the fifth subsection records miscellaneous methods of perpetrating fraud which are not dealt with in the other sections. For example this section would contain a record of a criminal who say, pays for C.O.D. orders or purchases goods from classified advertisements by means of fraudulent cheques. This classification too, is very general and has many other subsections.

The B. E. and T. index records and classifies the various methods and other pertinent facts concerning such crimes. This file might be searched in connection with a case involving genuine negotiable instruments such as money orders, or company cheques, which are stolen during a burglary.

The Characteristic Peculiarities file records any noticeable traits of criminals such as their general appearance, if somewhat unusual, nervous habits, means of transportation or dress, for example. Senders of anonymous letters also are recorded in the characteristic peculiarities file. The section concerning offences of this type is divided into two parts, threatening letters and other miscellaneous types.

As the name suggests, the Coloured Races index is a record of all criminals of non-caucasian origin. This index is fairly small and hence of great convenience when the offender is known to be non-white.

The Doubtful Traders index is a record of all the names of companies, types of companies, trades or occupations, existent or non-existent, which

criminals have mentioned in the course of committing any offence. Thus if a cheque-passer, for example, claims to be a steeple-jack or a representative of some well-known firm, or a doctor, etc., a search would be made of this file to locate suspects who may have used a similar story.

A Tattoo file is also maintained. Only tattoos which are normally visible are filed in this index, that is tattoos on the hands, fingers or forearms.

Deformities index is a record of any noticeable deformities to, or unusual condition of, any part of the body. Unusually tall or short criminals are recorded in this index, as are those who have unusual speech habits or are left-handed or ambidextrous.

A record is maintained also, of unusual nick-names filed in alphabetical sequence.

The files of any suspects located through a search of all the appropriate indices are then returned with the Headquarters file to the Fraudulent Cheque Section for identification or elimination if possible. If identification is effected a further report, and a photograph and description of the suspect is submitted by this section. In the event that no identification can be made through handwriting the files are returned to the Crime Index Section where the photographs and descriptions of all reasonably good suspects are submitted to the investigator.

Details of the case are then recorded in any appropriate indices so that future cases of similar nature may be compared with it. Then the file is sent to Central Registry to be stored until the need for it arises again.

Superintendent Churchman Introducing Magistrate Glenn E. Strike

Mr. Chairman, Commissioner, Ladies and Gentlemen.

There are two, but inseparable aspects of forensic laboratory operations:

(1) We have the technical work, the examination of the exhibits, the preparation of the charts, illustrations and reports

and

(2) the presentation of the evidence.

Now, we can meet and we can discuss the technical matters just as we have today and we will again tomorrow, but we cannot turn, as easily, to a legal authority for an appraisal of expert evidence, particularly expert evidence from the point of view of the Bench.

Tonight, however, we have a member of the Bench with us—one who was this year honoured at a dinner given by the local Bar Association on his completion of twenty-five years of service on the Bench. This is a significant honour. It has happened only twice in the long history of the Association but let us go back a bit.

Our guest this evening served with the Royal Canadian Artillery in World War I. He went overseas at the age of seventeen and was on active service until he was gassed at Monchy. On discharge from the service, he took up the study of law at Osgoode Hall. He graduated in 1921 and then practised law with a well known firm in Ottawa. In 1930 he was appointed a Deputy Magistrate and in the following year—1931—he was appointed Magistrate with province-wide jurisdiction. He has presided over a number of interesting cases, including the preliminary hearings of the Ottawa District cases arising out of the Royal Commission Enquiry into Espionage in this country. He is a Queen's Counsel. He has, for many years, been President of the Ottawa Boys' Club and Vice-President of the Union Mission for Men. He is interested in the Red Feather and other charitable organizations. In the field of sport he has won and held the City of Ottawa and District Tennis Championship. He was a noted badminton player and a skilful curler and last but by no means least, he possesses the Angler's sixth sense. He knows a good trout stream. Ladies and Gentlemen, I have great pleasure in introducing Magistrate Glenn Strike of Ottawa.

Expert Evidence—The Standpoint of the Bench

BY

MAGISTRATE GLENN E. STRIKE
Ottawa, Ontario

Mr. Commissioner, Chairman, Ladies and Gentlemen, it is indeed a pleasure for me and an honour to be invited to speak to this gathering. I don't propose or intend this evening to become the least bit technical. I have always thought that in the course of such a Seminar as you are engaged in at the moment, when you have an evening off you shouldn't be bored by a technical exposition of law or anything else after a very pleasant dinner. I have always thought that we people in this country and our neighbouring country are tremendous heroes and we are bears for punishment. We always seem to insist upon having an after dinner speaker to spoil the effects of rather a good dinner.

After listening to Superintendent Churchman I should think you would expect the beard would be down so far (indicating). Speaking of appearances reminds me that just before Christmas an old friend of mine came around. He had appeared before me on many occasions over the course of the years and knowing that he was to be before me that morning, he not having been in good enough shape to be before me the morning before, the Salvation Army Major and I got together. We wondered what we would do for John on this occasion; so we decided that perhaps if we could get him to a place outside the city, where he went occasionally, it might be a very good idea and having been in gaol most of the summer and part of the fall, he wasn't in too bad shape. So he appeared before me, he had some idea, I think, from the Salvation Army Major that his treatment was going to be reasonably lenient on this occasion and he pled guilty to the charge. I said "Now, John, this time, which may be a little extraordinary as far as you are concerned, we are going to send you out to this place outside the city and one of the reasons I am doing it for you this morning is because the fact that this morning you are all dressed up, you look pretty good—you look fine this morning" and he said "thank you, Your Worship, you look pretty good yourself".

We have many experiences in this Court over which I preside—during the depression years we had many people who used to come through. One morning I looked at the docket and there was a coloured gentleman there who had a very engaging smile—the whitest teeth you ever saw and I was quite interested. I asked him what his name was and he said "Boss" and finally ended "George Washington Brown". Then I asked him "Now, where did you come from?" He said "I came from 'way down South" and I said "what did you come to Canada for?"—he said "Why, Boss, they chased me out"—then I stuck my neck out and said "Well, what were they chasing you for?" and he said "Boss, I never did let them get close enough to tell me".

I had a girl before me and she had been before me on numerous occasions before. Yvonne wasn't a particularly bad girl—in many ways she never did have much of a chance—but she was always getting herself into trouble and we were doing our best to see what we could do for her in a social way, as we do in our courts. I placed her with various people and it hadn't worked very well and Yvonne always came back. One time I placed her in the Good

Shepherd's Convent which is a very excellent place in Ottawa and they do marvellous things for the girls there; but there they insist that the girls should do a bit of work. Yvonne was never partial to much work so the next time she came before the court I brought her in the office with several social workers, determining what we should do with Yvonne. I said "Yvonne, what in the world am I going to do with you now". "Well", she said "I don't care much what you do with me this morning as long as you don't send me back to the Good Shepherd's". I said "Why, what is the matter with the Good Shepherd's?" She said, "You get down there and you work and you pray and pray and you work and they tell you you are working for God and I am tired working for God, I am going to turn Protestant".

Just before dinner tonight, I was talking to one of the Americans here and in the course of our conversation I was telling him something about the court over which I preside and from his questions I thought that some of you might be interested to know just what jurisdiction this court has and I think perhaps some of the R.C.M.P. can brush up a little bit, too. Some times they need it.

The Magistrate's Court in the Province of Ontario is a kind of a Cinderella court—we are exclusively a criminal court and there appears before us all cases of either misdemeanor or more serious offences which we, in this country, call indictable offences. A Magistrate can try, with election, any case except the case for which a man may be hanged. That is, he cannot try and complete a case of murder, manslaughter, rape, treason and one or two other more serious offences. Apart from that, by election, a Magistrate can try and complete and sentence on any criminal case that may appear before him. In addition to that, he must hear all misdemeanors which include all traffic offences, all city by-laws and ordinances, all the numerous Penal Statutes—both Provincial and Federal. They all come as grist to the mill and, I may say, it is rather a varied court

To give you an idea of the more serious cases that come before my court—last year in the Province of Ontario, of every 100 indictable offences—now that is what in the United States I believe you call felonies—of all the serious offences, of every 100, 94 were started and completed in the Magistrate's Court without a Jury; 4 were tried by a County Court Judge and 2 were tried by a Supreme Court Judge and Jury. Now that may give you, perhaps, an idea that we have abolished in this country the Jury System—we haven't at all. A man may elect every time a man is charged with an indictable offence and comes before the Magistrate's Court. That man has his election; he may be tried before the Magistrate; he may be tried before a County Judge or he may be tried before a Court composed of a Judge and a Jury, but as I say the practice is established in this country—I can't exactly put my finger on the reason or tell you why that is. It is a fact that in the Province of Ontario, at least, of every 100 cases, 94 started and completed in the Magistrate's Court

When I first started twenty-five years ago we processed through the Court over which I presided approximately 3,000 cases and now we do somewhere between 45,000 and 50,000 and that, of course, is due to the large increase in the number of minor charges in connection with traffic offences. Apparently everybody is affected by that and Ottawa is no exception.

Now I was supposed to talk to you tonight on something about what I thought about expert witnesses and how they appear to me. I don't think there is any particular difference between an expert witness and any other kind of a witness except this—that an expert witness is entitled to, in a limited field, give his opinion which an ordinary witness is not entitled to do. I heard a definition of an expert the other day and it went something like this "X" is the unknown quantity and "SPERT" is a drip under pressure.

At college our lecturer on evidence used to tell us that when you get in court you will discover that there are liars, damn liars and experts.

Now what do we expect from an expert witness who appears before us in court? We expect, as I mentioned previously, exactly the same thing as we expect from an ordinary witness. We expect that witness will give us the benefit of his particular knowledge; we expect that he will be completely unbiased; we expect that his evidence will be such that the court can take and can rely on it. I believe that an expert witness should have the same status in court as Counsel has and that is he is an officer, or should be an officer, of the court—and can be treated as such. The important function in these days that an expert is such that he should not, under any circumstances, have any possibility of bias attached to his evidence. As most of you know when a great majority of prisoners are before the court charged with offences, they have little capital; they are not, in most cases, able themselves to employ experts. It is my belief that the expert evidence should be available to all accused persons and their Counsel before that expert testimony is given. I believe that an expert witness who comes before the court should be able to impress the court with the fact that he is there as an assistant to the court; he is not there for the purpose of obtaining a conviction; he is before the court for the purpose of giving information.

We have a saying in this country that the Crown never wins and the Crown never loses a case. I don't go all the way with that—I don't quite believe that that is quite true or should be considered quite true—except this—that while the Crown is not in any contest with the accused person, it is not a contest before the court—what the Crown and what the prosecution is endeavouring to do and should endeavour to do is to present all the evidence it has and it should be very zealous in presenting all the evidence it has before the courts so that a proper decision can be made by the court.

There is in these days a tendency and there is a certain pressure to have legislation passed which might, in the long run, make it easier for the prosecution to succeed and that is, that there is a tendency and a certain pressure exerted by certain individuals and certain organizations to have laws more in the nature of prohibitions than laws as we now know them. That is to say, that when a Statute is passed it becomes a prohibition in which it would make it very much easier for the Crown or for the prosecution to establish and prove their case and that is something I think we, who have anything to do with the administration of justice, should be very much opposed to. While it might make it very much easier for those who are interested in the administration of justice to obtain a conviction, it gets away from the elementary system of justice that we, in this country, insist be carried out by our police forces.

As Superintendent Churchman mentioned, some years ago I presided over a number of espionage trials. It was shortly before the same type of trials were being presided over by Judge Medina in the United States and you all know with what care and how meticulous against such tremendous provocation that Judge in the New York State was to make completely sure that all the rules were complied with; that regardless of all the provocation that was advanced by those who were accused he insisted that the letter of the law be carried out. Not only the letter but the spirit of it and the same thing applied here—all those who appeared before our courts were represented by the top Counsel in the country. They had the advantage of all the protection that our law gives a man who is charged; they had the advantage of that protection that we give in our country and in your country that every man is innocent until he is proved guilty.

Just after that trial was completed, a friend of mine who had some connection—pre-war—with Russia gave me a book which was a verbatim report of the famous trials in Russia known as the Purge Trials. These are the trials now that the Russians are endeavouring to say were a mistake. These are some of the things that Stalin had done that they now are endeavouring to repudiate and when I see these pressures and realize that this type of thing—that there are pressures existing—by well meaning people, mind you—to change our system whereby some of our laws become prohibitions I get out that book and I read that verbatim report of those cases. I am going to give you just part of it now. This is the address that that famous prosecutor, Vishinsky, gave at that trial, if you should call it a trial. May I say there was no evidence taken at that trial at all apart from the alleged confessions that were made by the accused persons. There wasn't any expert evidence to show that these people had written documents that would incriminate them. There were no handwriting experts there; there was not a tittle of evidence beyond the confession made by these men who, in your country—who, in our country—would be called Progressive Conservatives, Liberals or C.C.F., depending on which party was in power or in the United States would be Democrats or Republicans, depending on which party was in power.

This is the address of Comrade Vishinsky—he starts off:—

"Comrades, Judges, Members of the Military Collegium of the Supreme Court of the U.S.S.R., I am proceeding to make my speech for the prosecution in the present case which constitutes an exceptional phenomenon of extraordinary public and political significance. I would like, in the first place, to direct your attention to certain distinguishing features of this case, to certain of its outstanding peculiarities. It is not for the first time that the Supreme Court of our Country is examining a case involving gravest crimes directed against the well being of our Country, against our Socialist Fatherland, the Fatherland of the working peoples of the world but I would hardly be mistaken if I say that this is the first time that our court has had to examine a case like this and to examine a case of such crimes and such foul deeds as those that have passed at this trial before your eyes, before the eyes of the whole world—a case of such criminals as those you now see in the prisoner's dock.

"With every day and every hour that passed as the court investigation and the present case proceeded it brought to light ever more of the horrors of the chain of shameful unparalleled, monstrous crimes committed by the accused. The entire abominable shame of heinous deeds before which the base deeds of the most inveterate, vile, unbridled and despicable criminals fade and grow dim. And, indeed, what trial of all those that have taken place here, and there have been not a few of them lately, due to the conditions of the class struggle and the furious resistance of our enemies to the cause of Socialism. It can't compare with the present trial in the monstrosity of brazenness and the cynicism of the crimes committed by these gentlemen."

In similar vein he goes on and he finishes up by saying:

"How true and how right was Comrade Stalin in his estimation of the Trotskyites and the Bucharinites . . ."—

and all they had is that trial. It was the type of law which makes it necessary for a man to prove himself innocent rather than the proposition that we enforce in our country.

Then there was an article in one of our local papers after the famous B. and K. had visited London and it appeared that they were doing some sightseeing and this author suggested some things they should see and he said:

> "At the top of Fleet Street, just in the Strand, you will see the law courts. There the British are so pre-occupied with the mumble jumble of such things as wigs and gowns and the rights of the individual that they haven't yet got around to the Russian type trials with those apt confessions which are so popular in your country; but we must hurry—I want you to see the Speaker's corner at Marble Arch where anybody can climb a soap box and say what he wants and where unarmed police are so stupid they listen to subversive utterances without doing anything but keep the peace. Perhaps that is because Britain has no Siberia or Labour Camps. Silly of us, isn't it?"

Then there was the story I like about Malenkov—it's probably not true but it is a good story. He was going through one of the factories in England; he was asking about working conditions and the Foreman explained that work started at 8.00 a.m., there was a coffee break at 10.00; lunch from 12.00 to 1.00; tea break at 3.00 and the workers knocked off at 4.30 to be ready to go home at 5.00. Malenkov remarked that the British were too lenient with their workers. In Russia work began at 6.00, there was a half hour for lunch at noon and they worked through until 6.00 and the British Foreman's comment was that the British workers wouldn't stand for that because they have too many Communists among them.

Those of us who are interested, as we all are, in the administration of justice either from the prosecution or the defence or from the Bench, should see to it that all those principles for which our ancestors have fought; and which over the years, are maintained; where the important thing is that freedom and liberty of the subject and a man may live his life with dignity and that no man will be condemned until he has been fairly heard; that a man is innocent until proven guilty beyond a reasonable doubt; that a man is entitled to all the protection that the rules of our law give—rules that have been framed as a result of long experience; rules designed to take the guess work out of the administration of justice and make the decision of the court as foolproof as is humanly possible.

I know you have seen, as I have seen, cases where because of some obscure technicality, an accused has gone free and we are quite satisfied in our own minds of his guilt and yet it is better so. A great majority of our people require those rules, designed for the protection of the innocent—the other system of law is so repugnant to our nature as to be unthinkable.

Mr. Chairman, Ladies and Gentlemen, it has been a pleasure and as I said an honour to be here tonight to speak to you. I don't think I have advanced very much your knowledge about the Bench's impression of expert witnesses BUT if I have just for a moment caused you to think, to realize some of the responsibilities that you and I have, to maintain our system in the administration of justice, then this time will not have been wasted.

Statistical Methods and the Examination of Questioned Documents

BY

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The purpose of this paper is to stimulate interest in the application of statistics to the examination of questioned documents. An experiment is described which illustrates a possible approach to this problem in the field of handwriting identification.

Scientific Method

The accidental spilling of a bowl of soup into the midst of a bacteriological experiment resulted in the discovery of penicillin. Yet this fortunate accident would, undoubtedly, have passed without notice had it not been for the subsequent trained observations of a modern research scientist.

This incident is cited to illustrate that methodology, rather than chance, may be credited with the rapid increase in scientific knowledge of the past two centuries.

There are several scientific methods:

Experimental Method.—The most widely used and most fruitful of these is the experimental method.

Briefly, this method constitutes allowing only the factor being studied to vary and, as far as possible, controlling all other factors (e.g. varying the weight of a pendulum bob whilst controlling other factors such as pendulum length, atmospheric pressure, altitude and air currents). This method is only really effective for situations in which a high degree of control over all factors is possible.

Statistical Method.—We often encounter situations and problems about which we wish to discover facts but which cannot be subjected to the experimental technique. That is to say, we cannot control parts of the situation at will, or even suitably vary the factor we wish to study. This is generally true of such studies as the social and biological sciences.

Statistical method is a relatively modern field of technique which can be used to deal with situations of this nature. It consists of a systematic and planned approach in which, being unable to hold forces constant, we record the variations in all the forces operating and attempt to determine the separate part which each plays in influencing the result. In brief, statistical method consists of the collection, organization, preparation, analysis, interpretation and generalization of numerical data.

Other Scientific Methods

(1) *The Case Method:* This consists of studying in detail the characteristics peculiar to individual cases and generalizing from a number of such detailed studies.

(2) *The Historical Method:* This method is largely descriptive and non-quantitative.

It is with the statistical method, as previously described, that this paper is intended to deal. More specifically, it is intended to arouse the interest of document examiners in statistical method as a tool in document examination. As a matter of fact it is surprising that so little use has been made of statistics in our field to date, as we deal with phenomena which vary incessantly and

can in no wise be controlled by the examiner. Yet we all, almost exclusively, have taken refuge in the "case method" and generalize our knowledge of questioned documents from the experience we have gained in the examination of previous cases.

Moreover, our opinions are reached in a subjective manner and, although we may be able to illustrate what we have found, there is only our expert opinion to be relied upon concerning the significance that should be placed on what we illustrate.

The application of statistical procedures, unfortunately, will not change this situation overnight. As with other fields of investigation which have made use of statistics, new applications of the procedures and methods will have to be developed which can be used for handwriting, typewriting, etc.

No previous knowledge of the subject of mathematical statistics has been assumed in the reading of this paper, nor will any attempt be made here to impart knowledge of the mathematical manipulations which will be illustrated. Those who have already done some work with statistical procedures will recognize immediately the elementary methods employed. It is hoped that those who have no previous experience in this field will be sufficiently interested in what is here presented to commence studying the subject as the opportunity presents itself.

Nor should any hopeful student of statistical method become discouraged upon finding that it is a subject to which specialists devote a lifetime career. These men are constantly developing new ideas and designing new procedures which, when modified, can still be useful to scientists who have specialized in other fields and who have a limited knowledge of statistics.

There are many good college texts which deal with elementary statistical analysis and, for this reason, no particular one is being recommended to the would-be student. No more than a high school mathematical background would be required to study many of these texts, although others, implementing calculus and higher algebra as tools, would set high levels of mathematical training as a pre-requisite.

Some Problems for Which Statistical Method May Hold Answers

To date, practically no literature has been found by the writers of this paper which sets out any direct application of formal statistical methods in the examination of questioned documents. However, some consideration has brought to mind the following problems which are always pertinent, and to which statistical procedures might be applicable:

(1) What may be considered a significant feature in an individual's handwriting and *how* significant is it?
(2) What is normal variation in a person's handwriting? When should we consider a feature in a specimen writing to be divergent from a comparable feature in a questioned writing?
(3) What is the probability that a feature in a questioned writing would be repeated in a given sample of specimen handwriting by the same author? And with this last, the parallel problem—
(4) How large should a sample of specimen handwriting be in order to permit the examiner to state an unqualified opinion?
(5) Is it possible to state a definite mathematical probability figure in connection with a handwriting comparison?

These problems would be all relatively simple from a statistical standpoint, were it not for the fact that the document examiner is continually faced with the deliberate attempts of many to disguise and conceal the true facts by every conceivable means.

Nevertheless, if we make an organized attack on these problems at a statistical level, it is possible that some of the difficulties will be resolved in the process.

The Statistical Approach

By turning back to the brief definition of statistical method, we now note with greater emphasis that this method consists of various manipulations of *numerical* data. This means that, in order to implement statistical method in document examination, we must first convert our observations into numerical quantities, or we are lost at the beginning.

Here, at the outset, is the greatest, and the only real, problem of any to be surmounted before statistics can be an effective tool for the document examiner. It will be obvious to some, however, that should we accomplish this numerical conversion, it will be through objective measurement of a feature being examined, and this will add tremendous weight to the results of our examinations, as the—relatively more variable—subjective opinion of an individual could be substantially eliminated.

In looking for answers to the previously mentioned problems, the writers carried out the following experiment which was deliberately designed to yield numerical results so that statistical methods could be implemented.

Experiment

Purpose: To compare the heights of handwritten lower case letters "h" of two different authors with each other and with the standard statistical normal distribution curve.

Procedure: For the purpose of this experiment, the height of handwritten lower case letters "h" of two different authors was measured, this height being defined as the distance from the bottom of the staff to the top of the loop.

Figure I

One hundred samples of this letter were randomly selected from extensive "collected" writings of each of two authors. The writing of the first author, Author A, had been executed over a period of approximately a year and a half and was on ruled paper, the lines of which were spaced approximately 21/64" apart. The writing of Author B had been executed over a somewhat shorter period of time (approximately four months) on ruled paper, the lines of which were approximately 16/64" apart. Measurement of the letters was in 1/64" using a graduated glass rule.

AUTHOR A

Cell Mid-Point (x_i)	Frequency (f_i)	$= (x_i - 20)$	$f_i y_i$	$f_i y_i^2$
[illegible]	1	-8	-8	64
13	1	-7	-7	49
14	0	-6	0	0
15	1	-5	-5	25
16	2	-4	-8	32
17	4	-3	-12	36
18	7	-2	-14	28
19	11	-1	-11	11
[illegible]	8	0	0	0
[illegible]	9	1	9	9
[illegible]	11	2	22	44
[illegible]	10	3	30	90
[illegible]	9	4	36	144
[illegible]	8	5	40	200
[illegible]	7	6	42	252
[illegible]	3	7	21	147
[illegible]	3	8	24	192
[illegible]	2	9	18	162
[illegible]	1	10	10	100
[illegible]	[illegible]	11	22	242
[illegible]	100		299	1637

Coded Mean = $\frac{299}{100}$ = [illegible] = $\bar{y}$

[illegible] = [illegible] + [illegible] = [illegible] = $\bar{x}$

Variance = [illegible] = s_x^2

Standard Deviation = 3.75 = s_x

AUTHOR B

Cell Mid-Point (x_i)	Frequency (f_i)	$= (x_i - 22)$	$f_i y_i$	$f_i y_i^2$
15	1	-7	-7	49
16	[illegible]	-6	[illegible]	[illegible]
17	2	-5	-10	50
18	[illegible]	-4	[illegible]	[illegible]
19	4	-3	-12	36
20	11	-2	-22	44
21	10	-1	-10	10
22	17	[illegible]	[illegible]	[illegible]
23	14	[illegible]	14	14
24	7	[illegible]	[illegible]	[illegible]
25	12	[illegible]	[illegible]	100
26	7	[illegible]	[illegible]	[illegible]
27	5	[illegible]	5	125
28	1	[illegible]	[illegible]	[illegible]
29	2	7	14	98
TOTAL	100		[illegible]	[illegible]

Coded Mean = $\frac{[illegible]}{100}$ = [illegible] = $\bar{y}$

Sample Mean = [illegible] + [illegible] = [illegible] = $\bar{x}$

Variance = [illegible] = s_x^2

Standard Deviation = [illegible] = s_x

Figure II

The height of each letter "h" of both authors was tabulated and the frequency tables for the two distributions thus obtained are shown in Figure II.

Results: We see from these tables that the lower case letters "h" written by Author A range in height from 12/64″ to 31/64″. The arithmetic mean height for this distribution of the letter "h" is 22.09/64″, the variance is 14.04/64″, and the standard deviation is 3.75/64″. Comparable statistics taken from the handwriting of Author B are:

Range	15/64″ to 29/64″;
Mean	22.56/64″;
Variance	7.67/64″;
Standard deviation	2.77/64″.

The variance just mentioned is calculated by a fairly simple mathematical formula from the data shown in the tables of Figure II. The standard deviation is equal to the square root of the variance, and is defined in non-mathematical terms as a natural measure of the dispersion of a distribution (i.e. it gives us a reading on the concentration of the distribution about the mean).

Conclusions: Comparison of the frequency polygons of the two distributions indicates that the mean heights of letters "h" executed by Authors A and B are very similar.

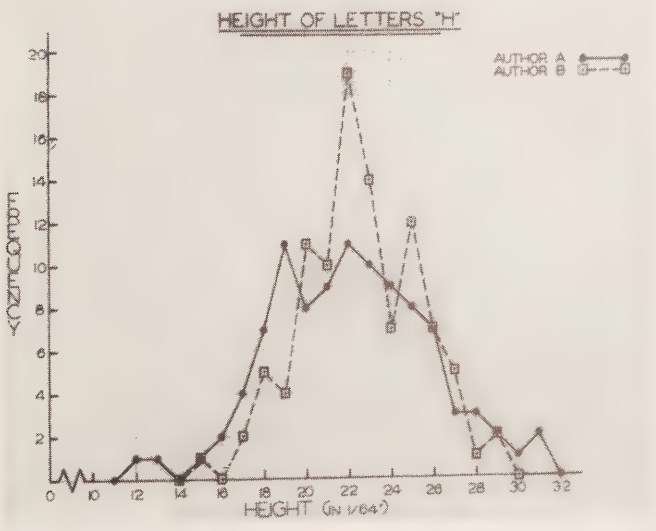

Figure III

A statistical method is available to calculate whether or not two such means differ significantly. One would hardly consider it necessary, however, to employ the method in this instance for it can be seen that the values are very close to one another. In contrast to this it may be noted that, for Author A, both the range and dispersion are greater than for Author B.

Before comparing these curves with the normal or Gaussian curve, as it is sometimes called, it would be well to take a look at the normal curve to see how it can appear as to size and dispersion.

The left portion of Figure IV shows a "family" of normal curves which have a common mean and standard deviation. They differ as to amount of area under each. These differences in area could be caused, for example, by taking different sized samples from the same population.

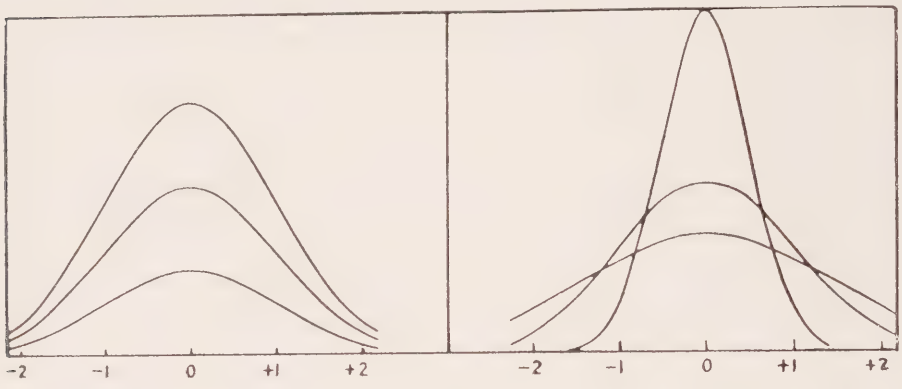

Figure IV

The right portion of Figure IV shows three normal curves, each with the same area and mean but with different standard deviations. This phenomenon would more likely occur if the samples were taken from three different populations. It would not be possible, however, to make such an offhand statement if only small samples were involved.

Returning now to Figure III, we see the similarity of the two frequency polygons to the normal curves shown in Figure IV. Undoubtedly too, an increase in the size of the samples taken would tend to smooth these curves so that they would more nearly approach the regular shape of the normal curve, for the jagged portions of these curves would become "filled in". In brief, they do compare favorably with the normal type of curve.

* * * * *

Turning again to the problems previously outlined, let us now reconsider and discuss each of them in the light of the information obtained from the foregoing experiment.

Looking at these problems from a statistical point of view, we again ask:— What may be considered a significant feature in an individual's handwriting, and *how* significant is it?

Regarding a "significant" feature as one which is both individual and persistent, we find that it is possible to demonstrate the persistence of a feature by measuring its range and dispersion. Natural variations in any characteristic is to be expected, but when this variation increases beyond certain limits persistence is lost and with it, significance.

It follows then that if it is possible to set up a statistical measure of a handwriting feature, we can tabulate this measure throughout any given sample and, as was done in this experiment, show its range and dispersion. The more persistent a feature is, the smaller will be its range and standard deviation.

This provides an answer to only half the problems of significance. Individuality of a feature would have to be established through some other approach.

The foregoing supplies a possible answer to the question:—What is normal variation is a person's handwriting? Approximately 68.27 per cent of the area under a normal curve (see Figure IV) lies within one standard deviation on either side of the mean, 95.45 per cent lies within two standard deviations on either side, and 99.73 per cent within three standard deviations. Now if we can establish the standard deviation of a distribution, it should be possible to set appropriate definite limits to what we call normal variation by using the standard deviation of our distribution as a guide.

There are, in fact, formal statistical methods available for going about the setting of these limits which statisticians call "confidence limits". Usually the confidence limits are decided on in advance of any computation and a feature falling outside these limits would then be termed divergent.

This brings us to consideration of our next two problems:—What is the probability that a feature in a questioned writing would be repeated in a given sample of specimen handwriting by the same author?, and:—How large should a sample of specimen handwriting be in order to permit the examiner to state an unqualified opinion?

By placing confidence limits on the distribution of a feature we have measured in a sample of specimen handwriting, we can predict with a given "confidence" that a comparable feature written by the same author (under the same conditions) will fall within these limits. This, in effect, amounts to the expression of a numerical probability concerning the occurrence of any given event.

As an example of this, let us take the distribution of the letters "h" of Author B in the previously described experiment. By calculating 95 per cent confidence limits for this distribution we could state that there is a probability of 0.05 that any given letter "h" written by this author under comparable conditions would fall outside the set limits.

Suppose now that we found in a questioned writing of limited extent three lower case letters "h" and all of them were shorter than the lower confidence limit determined from the specimen writing of Author B. We could say that there was a probability of 0.025^3 (i.e. 0.000016) that the three questioned letters "h" come from the same population as the experimental distribution of letters "h" obtained from the writing of Author B. In other words, the occurrence of this event would be unlikely. In all likelihood either the three questioned letters "h" would have been written by another author, or by the same author under a very different set of conditions, e.g. disguise.

One of the conditions which affects accuracy of confidence limits is sample size. An increase in the size of a sample permits more accurate definition of confidence limits and so it follows that statistically we would require an ample specimen of handwriting to establish habit and natural variation just as we do when comparing handwritings subjectively.

Our final problem:—Is it possible to state a definite mathematical probability figure in connection with a handwriting comparison?—is one of considerable magnitude. For the present at least we must answer that, although it might be possible to compile such a probability, the accuracy of the application of the statistical methods one might employ would be too questionable to be relied upon.

To be worthwhile, any procedure employing an application of statistical methods to document examination must first be established to be both reliable and valid. Only then can it become a useful tool in the furtherance of our profession as a science.

Mr. RODGERS: There is one thing I was quite interested in, in your third slide, in connection with those two curves—I was thinking of the case of where one is questioned and the other is known and you are investigating whether they are the same author. There are two features that you mention which are important—one was the difference in means and the other the difference in dispersion. I think you showed the difference in means was negative.

I was wondering about the difference in dispersions. Did you examine that to see whether that was significant?

Cst. WRENSHALL: It can be done but we did not do it. As I said earlier, we did not want to make the paper terribly technical in presentation and we left any mathematical calculations out that we could and that was one of them. There is some difference there but I don't know that it would be particularly significant.

Dr. COLDWELL: How large an example do you feel you need to determine the variability of any one given character?

Cst. WRENSHALL: That is something we are going to have to work on, Dr. Coldwell, because it is something we do not know as yet and perhaps we can fall back on psychologists in their methods in so doing. They use "expert ratings" as criteria to establish what they want statistically in various methods of testing. As far as sample sizes are concerned, we don't know statistically how great a sample size we need. I have seen discourses on sample sizes etc., and definitely an increase in sample sizes, from a statistical point of view, increases your accuracy to a point. It may not be necessary from a handwriting standpoint. That is the point I am driving at. You may not need a hundred letters "h" from a handwriting standpoint to establish the range of variation in your own mind and we may have to use—in fact I am sure we will have to use—the opinion of the examiner to establish the validity of any statistical methods which we establish.

Cst. FAY: Do you think that a statistical approach to the problem, assuming that it is valid, would ever replace the document examiner today? In other words, could a statistician arrive at an opinion of identity or non-identity without actually knowing anything about handwriting?

Cst. WRENSHALL: I would say definitely not. The practice is this—the expert in any field uses statistical methods to objectively establish his hypothesis and the statistician only comes in as a consultant on the statistical method employed, not on the question of what they want to establish—for example, identity or non-identity. An example of this statistical design of experiments and the expert statistician—that is, not a person just dabbling in methods—the expert statistician will assist the experimenter in deciding his experiments so that statistical procedure can be used on the experiment for the completion of it. He doesn't, however, set up the hypothesis that the examiner wants to use or establish.

Mr. MARSHALL: You selected a very common letter in "h"—take the unusual letters, the rare letters—"x" is a fairly uncommon letter—that wouldn't be so useful would it?

Cst. WRENSHALL: The reason for selecting the letter "h" wasn't its common usage or significance but the facility with which we could measure it and show the measurements.

Mr. MARSHALL: In measuring a specimen would you need to take any more than one letter anyway—take a common letter like "h"—would that do for your research?

Cst. WRENSHALL: If you are thinking of the question of establishing identity or non-identity, you have to do this with every feature you consider significant and, of course, this is going to be one of the difficulties in employing statistical methods—that they will be time consuming. It took us considerable time to measure two hundred letters "h". The question is whether it is worth the necessary time.

Lt. PURTELL: What type of measuring instrument did you use—how accurate?

Cst. WRENSHALL: It was graduated in 64ths of an inch—one of the standard document examination glass slides.

Mr. THOLL: It is well known by document examiners who have worked over a period of time—who worked according to certain rules—there are certain characteristics in handwriting which might be called variable and others which are more invariable and, of course, that all depends largely on the school system learned and the individuals themselves. Now it seems to me that there could be such a thing as document mathematics combined with what you have called mathematical terms and also with what document examiners brought out during their many years of experimentation of work in the field. You have shop mathematics, you have police mathematics, you have various kinds of specialized mathematics—thereby, by combining the two, I believe you could evolve something that would be very useful and very much of a science which could be utilized by all the people in the field.

Cst. WRENSHALL: Yes, incidentally Lt. Smith and I were talking about it last night and we both feel that the ultimate that could be obtained would be an objective scientific method of doing your examination, tabulating your variations etc. However, you are not going to avoid your subjective summing up of the case in the light of your previous experience and I can't foresee it myself. Lt. Smith can't foresee it, is that not correct?

Lt. SMITH: That is right.

Mr. THOLL: A kind of a marriage of the sciences.

Mr. DOUD: I think while it certainly is a desirable goal, Albert S. Osborn and many other prominent experts of years past and of the present have dabbled in this field and I think where your problem arises is in the zone of rare or accidental characteristics. I mean, how are you going to attach value to a certain unusual characteristic? There you enter into the field of probabilities. Are you going to evolve the theory of probability of something happening when you don't know how many people may do it. You would have to survey everybody in Canada in order to determine how many people make a letter "e" with a peculiar hook in the bottom or a letter "h" with a convex lower portion and things of that nature. I think while variation is certainly important in handwriting the important feature as far as identifying handwriting is concerned is the rare, the accidental and the unusual characteristics and I think there is where your deficiency in mathematical complications arises. You can't attach a set mathematical significance to a characteristic if you don't know how other people do it.

Cst. WRENSHALL: No, you are quite right, Mr. Doud—I think Mr. Tholl put his finger on the thing. We still need the subjective summing up of the case.

Mr. DOUD: I think it is more in analysis than in summing up.

Cst. WRENSHALL: I do not necessarily agree with that. If your feature is accidental you do not have persistence and if you do not have persistence you do not necessarily have significance. Insofar as comparing the features with all the possible features in North America—or something like that—I do not

think this necessarily applies. I know the line of thinking you are following because I followed it myself and Mr. Duke and I have thrashed it out thoroughly on several occasions. Actually what you are doing in comparison is either relating a questioned with the known or not relating it. If you can set up your statistical distributions as we did for these letters "h",—we wondered if we had chosen a fortunate comparison in the two distributions we did have because they both had the same mean—if you had two distributions with different means, you could very easily have them separated but with overlapping tails. Of course, you would need a full sample of both. Then if a feature fell between the two distributions, the probability of it lying between the two is the overlapped area under one curve multiplied by the overlapped area under the other curve. Now, if your normal curve has a mean of zero and a standard deviation of one, this means the total area under the curve can be expressed as one and your probabilities as parts of one. Thus the product of the two overlapped areas will give you the probability of getting a coincidence of two letters from two separate distributions; so if you can set up the probability for your particular examination at hand you don't necessarily have to be able to state a probability of the feature occurring in anybody's handwriting. Cst. Wrenshall illustrated these equations on the blackboard.

Mr. MARSHALL: Speaking along that same line I find in the admitted writing the writer, instead of dotting an "i", uses a little dash—in fact he uses quite a long dash—just about three or four dots in length and he does that rather habitually throughout his writing. In fact, he never uses the dot and then, let us say in the questioned writing, we discovered the very same significant feature. I can't see that it would add to one's evidence to say this does occur in writing once in a million times—once in ten million times rather than to say to a Judge and the Jury this is a rare thing—I am sure it doesn't occur very often in writing—you hardly see it yourself and here it is in both samples.

Cst. WRENSHALL: That brings up a good point, Mr. Marshall. You could say that there is a certain probability that author "A" did write the questioned material, and then you have to explain to the Jury what you interpreted from that yourself—that is to say, do you consider that a probability of, say, one in twenty-three million makes it a significant similarity, and is it your opinion that the two writings are common authorship? The actual quotation of a mathematical figure isn't going to make that much difference although it may bring home to them just how significant it is when you do make a positive identification.

The Scientific Report With Respect to Document Examination

BY

Cst. J. F. FAY,
Fraudulent Cheque Section,
R.C.M. Police,
Ottawa

The purpose of any report is to convey a set of facts from the mind of the writer to the mind of the reader. Perhaps the basic difference that a scientific report has from other kinds of reports is that it follows more the principles of brevity, clarity, precision and accuracy.

No doubt all examiners strive to this end, and it is the purpose of this paper to illustrate the various methods of presenting reports on handwriting comparisons and to probe the feasibility of adopting a uniform method of reporting to the investigator.

To ascertain whether examiners utilize a fixed form, contact was established with various examiners with particular attention being focused on handwriting cases that could be subsequently presented in court. The co-operation which we received was excellent and the results have been so informative that further enquiries are being conducted in relation to qualified opinions as handwriting conclusions. A further paper on this aspect of Document Examination will be prepared and published in the future.

In compiling the material it was found that basically reports have the following in common:

(*a*) Subject or reference.
(*b*) To whom directed.
(*c*) Description of questioned and standard material.
(*d*) Conclusions.
(*e*) Remarks re disposition of exhibits, etc.

In addition to the above, it was found that reports may also contain:

(1) Purpose of examination.
(2) Examination conducted (data).
(3) History of Case—
    1. Detailed.
    2. General.
(4) Reasons for conclusions.

Considering the above briefly, (*a*) and (*b*) are similar in all reports, containing a brief outline indicating by whom examined, for whom examined, file references and file heading.

Considerable variation, however, in describing exhibits has been adopted by many examiners. An example of a detailed description is:

> The Questioned Document—
>
> Ex. 1—A 1947 Passenger Vehicle Registration Renewal Stub bearing Licence No. Dc-75-12 dated January 18, 1947. The face of this document shows the following data:
>
> The name and address of the owner is given as Joseph K., Hillcrest, Sidney, New York; the vehicle is described as a 1941 Plymouth Coupe, Model P-11, serial number 15025766, engine number 117682, and the name appearing on the line where the signature of the owner is required reads: Joseph K.

82384—7½

On the reverse side of this certificate in the space allotted for the transfer of ownership, it is indicated that on July 3, 1947, Joseph K. allegedly transferred ownership to John B., 25½ Platt Street, Walton, New York. (The subject John B. allegedly admits that he wrote his name and address).

The questioned writing consists of the author of the name Joseph K. on the line allotted for the Seller's signature on the reverse side of this document. (William E. Kirwan, New York State Police Laboratory).

Descriptions may also be very brief such as:

1. "D. One page specimen typewriting
   F. Operator's Licence and invoice signed Joseph B."
   (Bureau of Criminal Identification and Investigation, Department of Justice, Calif.)
2. "Q-1 Original Treasury cheque No. E H 303668, endorsed: "Peter V. (S1—Blue Fluid Ink)
   Standards:
   S-1 Peter V., exemplars:
   A—Blank cheque specimen
   B—A-7 affidavit"
   (Stanley S. Smith, Lieut., Pennsylvania State Police)

Between the long and short types of description we found a number similar to the following:

1. "Standards
   The following documents containing known handwriting and signatures of Joseph O'Brien were submitted for this examination:
   A. Personnel records of the New York City Police Department of Joseph O'Brien which contain his original application form prepared in his own handwriting and signed at two points on March 18, 1939, and a certificate of residence signed Sept. 11, 1939, and a sworn statement to a medical examination form signed August 23, 1937.
   B. Department of etc. . . ."
   (Ordway Hilton, Examiner of Questioned Doc. 15 Park Row, New York 28)
2. "Q-1 One Government of Canada, Department of National Health and Welfare cheque numbered A50-79321 in the amount of $50.00, dated Nov. 12, 1955, and payable to a Mrs. Jessie A., 160 Bell Street, Edmonton, Alberta." (R.C.M. Police Laboratories).

In describing known standards or exemplars a question arises as to the use of the words "purported", or "allegedly". The employment of such expressions may tend to make a report confusing to the reader. We quote herewith a number of examples in describing known standards:

1. "C. Leade signed by Casey M. and three F.P. cards and one yellow note." (Bureau of Criminal Identification and Investigation, Department of Justice, California).
2. "Exemplars of the handwriting of William J. appearing on four sheets of white ruled paper dated January 23, 1948." (James V. P. Conway, Postal Inspector, San Francisco, California.)
3. "The following documents containing known handwriting and signatures of Joseph F. O'Brien were submitted for this examination:
   ——(3) The signature page (page 23) of a questionnaire prepared for the District Attorney, bearing two signatures of Joseph O'Brien and two lines of handwriting."
   (Ordway Hilton, New York, N.Y.)
4. "Affidavit being the known signatures of Nicholas V." (Dan Houser, Det. Sgt., Detroit Police Department.)
5. "The known writing of Joseph K.—
   Ex. 2—A pencil written receipt dated June 16, 1947, signed by this subject for payment of $50.00 received from Ivan W. for rent due on June 16, 1947.
   Ex. 3—An envelope addressed to Mrs. Mabel W., Church Street, Deposit, New York, bearing the postmark Sidney, N.Y., December 20, 1946 @ 7:00 P.M. All of the writing appearing on this document is allegedly that of the subject Joseph K." (William E. Kirwan, New York State Police Laboratory)

6. "As requested I have made an examination of the questioned signature, Stewart S. on cheques numbered 1449, 1455, 1456, 1474 and 1475 and compared same with the standard signature, Stewart S. on vouchers numbered 1342, 1344, 1349, 1357, 1368 and 1370." (Robert E. Moore, Detroit, Mich.)

7. "Standards
S-2 Peter V., Jr., exemplars:
A—Blank cheque specimen."
(Stanley S. Smith, Lieut. Pennsylvania State Police)

8. "K-1—Known handwriting of Albert P. as follows:
   (*a*) Signature on printed form "Record of Arrest" from office of the Sheriff, Saint Louis County, Missouri, dated April 15, 1954.
   (*b*) Signature on printed form "Receipt of Certificate of Title", Department of Revenue, State of Missouri, dated May 2, 1953.
   (*c*) Signature on printed form, Department of Revenue, State of Missouri, word "TRANSFER" printed across face of form dated May 2, 1953". (George G. Swett, St. Louis, Missouri.)

9. "Four sheets of foolscap paper bearing specimen signatures 'Mary B.' purportedly written by Mary B." (R.C.M.P. Laboratories)

The description of exhibits generally has fallen into two classes:

(*a*) Those in which the exhibit is described in sufficient detail to permit the examiner to recall the exhibit in question without having it at hand. In effect he is primarily describing the exhibit for his own benefit.

(*b*) Those in which the exhibit is described in brief terms to permit the recipient to know that the exhibit was received and was used in the examination. In effect he has described the exhibit primarily for the benefit of the recipient.

As the purpose of a technical report is to convey facts from one mind to another, the report should primarily be designed for the recipient, and we doubt that the contributor is interested in seeing his exhibits described in meticulous detail, as he undoubtedly knows what he submitted for examination.

We suggest, therefore, that the simplest terms be employed, couched in language concise enough to avoid ambiguity. As examples of such simplicity we draw your attention to the description of Lieut. Stanley Smith of the Pennsylvania State Police, and those employed by the examiners of the Bureau of Criminal Identification and Investigation of the Department of Justice, California.

Conclusions of a report may be stated in different manners and the following are a number of examples.

1. "An examination and comparison of the material submitted resulted in the following conclusions:
   (*a*) The handwriting of Enclosure A and the signature of Enclosure B is unquestionably that of one person.
   (*b*) A comparison of this handwriting on Enclosures A and B with the genuine handwriting of subject contained in Enclosure C reveals several differences, among which are included the slant of the writing, the manner of preparing the capital "M", small "a's", "g's", "t's" and "n's" among others, which necessitates a conclusion at this time that the handwriting on Enclosures A and B is not that of subject.
   (*c*) The typewriting appearing on Enclosure B was definitely prepared on the same machine from which the specimen of Enclosure D was obtained.
   (*d*) Despite some pictorial resemblance between the handwriting on Enclosure E and the signature of Joseph BANKS on Enclosure F, there are acute differences present particularly noticeable in the capital "B" and the small "a", which arouse a strong suspicion at this time that the note of Enclosure E was prepared by someone other than BANKS.

These conclusions are based upon a relatively small amount of known material in each instance and should be considered as subject to confirmation by the examination of additional specimens when they become available." (Bureau of Criminal Identification and Investigation, Department of Justice, Office of The Attorney General, California, U.S.A.)

2. "REMARKS: The above listed specimens have been analysed. It is evident, in my judgment, that the endorsement purporting to read "Isaac F." on Q1 is not an authentic signature by Isaac B., the writer of K1. It is apparent also, in my judgment, that in the endorsement of Q1 the forger did not attempt to simulate the form of Isaac F's. signature.

The available known writing of Minoru I. is inextensive. However, examination of such known writing has not developed any indication that Minoru I, is the author of the endorsement in question.

K3 demonstrates quite adequately the writing habits of John C. It may be noted that in the "request" portion of K3 John C. made no effort to camouflage his writing habits.

It is clear that John C. did not endorse Q1 in his normal handwriting. As stated in Paragraph 2, simulation of the signature of the true payee of Q1 is not involved. There remains for consideration whether John C. may have endorsed Q1 in an intentionally distorted or disguised handwriting.

Some area of agreement exists between John C's, known writing and the conformation of several letters of the disputed endorsement. In my judgment, such agreement is of limited aggregate significance and does little more than to raise the possibility that John C. endorsed Q1. It is my conclusion, from a careful comparison of this 11-letter disputed endorsement and the known writing habits of John C., as demonstrated prior and subsequent to the issuance of Q1, that there is no fundamental basis for the finding that Q1 was in fact endorsed by John C. in an intentionally disguised or distorted hand. It is my conclusion that on the handwriting evidence there is a substantial doubt as to John C's responsibility.

Not infrequently I have been asked, or I have heard as I have in this case, the question "Should a criminal case be tried on handwriting evidence alone?" This question, as stated, and as I see it, has no categorial response because the question represents an evasion, a failure to come to grips with the basic question which I believe should be resolved in individual cases, to wit: "Is the handwriting evidence in THIS case inherently convincing?" It is my view (not an original approach as it was advanced years ago by Wigmore and since by many others) that handwriting evidence should stand or fall, not on its classification as "opinion handwriting evidence", but on its inherent convincingness. I believe the latter hinges in an accumulative sense on whether the handwriting evidence in a given case is inherently convincing because of (*a*) its quantity and quality, its singularity, (*b*) its reasons and demonstrability, and (*c*) the proficiency of its presenting witness. Applying these considerations from the standpoint of whether the handwriting evidence in the present case is inherently convincing of John C's. responsibility, my answer to (*a*) and (*b*) is a definite "No".

All specimens are being retained for the present. Attention is invited to the circumstances that my examination has included specimens which were not available at the time of the prior examination in this case." (James V. P. Conway, Postal Inspector, California).

Opinion of William Dienstein, handwriting examiner in the case of X:

"1. A person's handwriting is developed by practice in doing the same thing repeatedly until it becomes easier to write in one way and more difficult to write in any other way.

(*a*) Writing becomes an habitual act.

(*b*) Because it is habitual, each person develops certain characteristics in the manner of his writing, unique to himself.

(*c*) Therefore, it becomes possible to identify a person by his handwriting. Although effort may be made to conceal the style of writing, the writer, unaware of his own characteristics, reveals himself by the presence of these characteristics.

2 Positive comparison between the standard writings of a person and the questioned document is obtained when a sufficient number of similarities exist between the writing in question and the genuine writing (standard).

If no unaccountable difference between the two exists, the conclusion is reached that the same person wrote both the standard and the questioned document.

3. The number of similarities required for a positive comparison is flexible. Albert Osborn, author of QUESTIONED DOCUMENTS, works on the accepted premise that the chance of similarities in the construction of any one letter by any two persons is one in five. According to the law of probability of occurrence, if the basic chance is one in five, then the probability of occurrence where more than one similarity is found is 1/5 carried to the power of the number of similarities. Let us say eight similarities exist between two writings. Then the probability of occurrence of these same characteristics in the writings of any two persons is 1/5 carried to the eighth power or one chance in 390,625.
4. This officer examined the handwriting on the standards marked enclosures No. 4, No. 6, No. 7 and the handwriting on the questioned document marked enclosure No. 1.
5. Comparison between the handwriting on the standards and the handwriting on the questioned document reveals the following similarities:
   (*a*) The figure "7" has a characteristic hook at the initial portion of the horizontal part . (Encls. No. 1, No. 4, No. 6.)
   (*b*) The capital letter "F" has a characteristic downstroke at the terminal of the centre horizontal crossing. (Encls. No. 1, No. 6.)
   (*c*) The capital "F's" in the endorsement are made with three distinct strokes. (Encls. No. 1, No. 7.)
   (*d*) The numeral "0" preceding the word "dollars" has a characteristic opening at the top. (Encls. No. 1, No. 6.)
   (*e*) The first small letters succeeding the capitals in the words "thirty-five" are disconnected. (Encls. No. 1, No. 6.)
   (*f*) The initial stroke of the first small letters succeeding the capitals in the words "thirty-five" have a characteristic initial upstroke. (Encls. No. 1, No. 6.)
   (*g*) The dash preceding the words "thirty-five" appears in the questioned document. (Encl. No. 1) and on Encl. No. 4.
   (*h*) The terminal stroke of the "y" in the word "thirty" has a distinct similar upstroke tendency at its termination. (Encls. No. 1, No. 6.)
   (*i*) The dot between the "5" and the "0" in the numerical amount after the dollar sign appears above the line. Although it does not appear in the writing on Encl. No. 6, it is present in the numerical amount on Encl. No. 4. The position of the dot above the line is characteristic. The exception may be accounted for in this manner: The subject recalled how the amount was written on the questioned document and therefore introduced the change.
6. The probability of concurrence of the foregoing characteristics in the handwriting of anyone other than the person who wrote the standards is but one in one million, nine hundred fifty-three thousand, one hundred twenty-five (1/1,953,125). This is based on the accepted probability of occurrence of any one characteristic in the handwriting of another as one in five (1/5).
7. Inasmuch as the writing on the questioned document was carefully executed in disguise and tracing the differences between the standards and questioned document are accountable.
8. Because of the foregoing, it is the opinion of this examiner that the person who executed the standards, in all probability, executed the questioned document."

Opinion and Reasons of Ordway Hilton, New York, N.Y.

"From a very thorough examination of the five disputed Joseph Owen signatures and other pieces of writing and a comparison of these signatures and general writing with the signatures and handwriting of Joseph F. O'BRIEN. I am of the very definite opinion that Joseph F. O'Brien signed the Joseph Owen signatures at the National City Safe Deposit Company and prepared the other portions of the handwriting on these forms which would have been written by the box lessor.

The identification of the writer of a fictitious signature is dependent upon several factors. In the first place, the fictitious signature must be written in a free and natural handwriting. Then it is also necessary to have not only

signatures of the person who wrote this fictitious signature but also some of his general writing. This latter condition is necessary because a fictitious signature does not contain the same letters and combinations of letters that are found in the usual signature of the person who prepared it. In the problem at hand both of these conditions are satisfied.

In addition the fictitious signature Joseph Owen and the signatures of the writer who is suspected of having used this Joseph Owen signature Joseph F. O'Brien, both contain the same Christian name, the same initial capital letter of the surname and both end in the combination "en". In other words, in this particular problem most of the letter combinations found in the first signature occur in the usual signatures of Joseph F. O'Brien, and this makes possible a very thorough and extensive study based upon the Joseph F. O'Brien signatures as well as the general handwriting.

There are five signatures prepared in connection with the leasing of the safe deposit box. All of these signatures are freely written; all of them are written naturally with a uniform slant, slight emphasis on the downstrokes, smooth connecting strokes, and in general a moderately good skill of execution. When compared with the Joseph F. O'Brien signatures, these same qualities of execution are found to occur, and furthermore, the individual letter forms which are used in common in preparing the Joseph Owen and Joseph F. O'Brien signatures are executed in the same personal manner.

Only the "w" in Owen is not found in the O'Brien signatures, but there are a number of examples of how O'Brien writes this letter in the general writing found in the questionnaires. The manner of execution and the form of the "w" and its connecting strokes agree closely in the O'Brien writing and in the Owen signatures. It is not the result of any one of these points of agreement, but rather of the combination of all of the detailed points of agreement between the O'Brien and Owen signatures and handwriting that leads me to the very definite opinion that Joseph F. O'Brien signed as Joseph Owen in connection with the safe deposit box at the National City Safe Deposit Company.

The small bits of general writing, particularly the dates and the name Anna Owen which appear on the various National City Safe Deposit Company records which are clearly written by the lessor Joseph Owen further link Joseph O'Brien to the preparation of these safe deposit records. In the various questionnaires his wifes name Anna Green O'Brien appears at several points, and there are a number of examples of his writing of numerals. The manner in which these numerals and the name Anna are written agree closely with the corresponding material on the safe deposit records and establishes conclusively that they are written by one and the same person.

In the course of this examination a careful study was made of any possible divergencies between the O'Brien and Owen writing which might establish that these two writings were done by two different writers. It is my opinion that there are no such divergencies. The only differences between any specimen of the Owen writing and the O'Brien writing results from the natural variation found throughout Joseph F. O'Brien's handwriting. Consequently, I can only conclude that Joseph F. O'Brien signed the five Joseph Owen signatures to the records of the National City Safe Deposit Company."

The opinions and conclusions of Detective Sergeant Dan Houser, Detroit Police Department, follow:

"1. All the questioned signatures—John Doe appearing on the two questioned cheques and the bank savings account card are by the same hand.
2. The known signatures of John Roe appearing on the Counter Cheque and Affidavit have some similarity to the questioned writing, however there are not enough points of comparison to make a positive identification with the questioned writing.
3. After examining the known signatures of John Roe on the Counter Cheque and Affidavit it is the opinion, the handwriting John Doe obtained in this Bureau were an attempt by John Roe to disguise his writing so it could not be identified with the questioned Cheques".

An example of the conclusions expressed by the New York State Police Laboratory:

"It is the opinion of our Document Examiner, William Kirwin, New York State Police Laboratory, that the person, whose known writing has been submitted as being that of Joseph K. Smith, did not write the name, Joseph K. Smith where it appears as the name of the "Seller" on the back of Exhibit No. 1.

It is further opinion that the person known as John Black, whose known writing appears on Exhibits 4-a, 4-b, 4-c, 5, and on the three lines allotted for the name of the new owner on the back of Exhibit No. 1, is the author of the questioned name, Joseph K. Smith, on the back of Exhibit 1."

The opinions of Hugh C. Leggett, Ohio State Bureau of Criminal Identification and Investigation, follows:

"Using for comparison the two signatures in question and three signatures, known to be the genuine signatures of "Marie Tobin", I find a total of fifteen points of similarity that would, in my opinion, indicate that the two signatures in question are genuine. In order to substantiate this opinion, I have prepared Pictorial Evidence of all handwriting submitted, and have clearly indicated in red ink the various points of comparison upon which this opinion is based.

1. The "loop", used as a beginning stroke in the capital letter "M", in the names "Marie". (Nos. 1 and 2 of Pictorial Evidence)
2. The design of the capital letter "M" in the names "Marie". (Nos. 1, 2, 3, 4 and 5 of Pictorial Evidence)
3. Lack of junction between the capital letter "M", in the names "Marie", and the small letter "a", in the same name. (Nos. 1, 2, 3, 4 and 5 of Pictorial Evidence)
4. The design of the small letter "a", in the names "Marie". (Nos. 1, 2, 3, 4 and 5 of Pictorial Evidence) (Also note "beard", in Nos. 4 and 5 of Pictorial Evidence)
5. The design of the small letter "r", in the names "Marie". (Nos. 1, 2, 3, 4 and 5 of Pictorial Evidence)
6. The design of the small letter "i", in the names "Marie". (Nos. 1, 2, 3, 4 and 5 of Pictorial Evidence)
7. The design of the small letter "e", in the names "Marie". (Nos. 1 and 3 of Pictorial Evidence) (Note also ending strokes in Nos. 1, 4 and 5)
8. The use of heavy "eye-dots", in the names "Marie" and "Tobin". (Nos. 1, 2, 3, 4 and 5 of Pictorial Evidence)
9. The design of the capital letter "T" in the names "Tobin". (Note "buckle-knot" in Nos. 1, 3, 4 and 5 Pictorial Evidence)
10. The use of a long junction between the capital letter "T", and the small letter "o", in the names "Tobin". (Nos. 1, 2, 3, 4 and 5 of Pictorial Evidence)
11. The design of the small letter "o", in the names "Tobin". (Note the following:—Nos. 1 and 2, with the wide letter "o", Nos. 1 and 3, with the open top, and the oblong type of small letter "o", in Nos. 3, 4 and 5 Pictorial Evidence)
12. The use of a long junction between the small letter "o" and the small letter "b", in the names "Tobin". (Nos. 1, 2, 3, 4 and 5 of Pictorial Evidence)
13. The design of the small letter "b", in the names "Tobin". (Note "loop" at the top of this letter in Nos. 1, 3 and 4 of Pictorial Evidence)
14. The design of the small letters "i", in the names "Tobin". (Nos. 1, 2, 3, 4 and 5 of Pictorial Evidence)

Therefore taking into consideration the above analysis, I am of the opinion that the two signatures of "Marie Tobin", as affixed to the Promissory Note and Sales Contract are genuine. Both signatures contain the same individual characteristics or writing habits found in the three genuine signatures. All signatures are of the same system of writing and the uniformity of slant is very apparent. (Reverse the Pictorial Evidence and note how true uniformity of slant appears in Nos. 1, 2, 4 and 5)."

Opinions of Anthony Liberi, Conn. State Bureau of Identification, follow:

"From the evaluation of the various similarities, features, elements, and idiosyncrasies existing in the two writings, it is my opinion that the handwriting of Joseph K. Smith compares favourably with the handwriting appearing on the paper submitted by Detective Sergeant Joseph L. Brown."

The opinions of Robert E. Moore, Detroit, Michigan, follow:

"In making this examination I find that the questioned signature contains the same habits or characteristics as those that are found in the standard signatures. They are:

1. Consistency in the formation of the capital letter W in 10 of 12 specimens.
2. Complete break between the capital letter W and small letter in 10 of 12 specimens.

3. Position of the small letter m in its relation to the capital letter W.
4. The angular foot of the strokes in the letter l.
5. Angular hump and foot of the strokes in the letter m.
6. The strokes at the top of the bodies of the letter o.
7. The stroke from the letter o to the letter s.
8. The overhand movement in the stroke from the letter s to the letter t.
9. The long stroke from the letter e to the letter r.
10. The dots to the letter i appearing in the form of a short downward dash.

Based upon this examination it is my opinion that the questioned signature Wm. Wooster on the Will dated 4th day of April A.D. 1953, and the standard signatures Wm. Wooster on a document dated 4-14-53, William Wooster on a document marked A, William G. Wooster dated May 20-45 marked B, Wm. G. Wooster dated October 18 marked C and William G. Wooster Dated Dec. 17-48, were written by one and the same person."

The opinions of Stanley S. Smith, Pennsylvania State Police, follow:

"(*a*) S-1 writer, Peter Jones, did not write the Q-1 endorsement.
(*b*) S-2 and S-3 writers did not write the Q-1 endorsement.
(*c*) S-4 writer, Joe Brown, wrote the questioned Q-1 endorsement."

The opinions of George G. Swett, St. Louis, Miss., follow:

"As a result of the examination and comparison conducted, the conclusion was reached that the signatures, "Albert C. Lewis", and "Albert Carl Lewis", on Exhibits K-2 and Q-2, were written by one and the same person. The further conclusion was reached that this same individual wrote exhibits K-1 and Q-1. In other words, the conclusion now has been reached that all signatures "Albert Paglino" and "Albert C. Lewis", examined to date on Exhibits K-1 and K-2 and Q-1 and Q-2, were written by one and the same individual."

The choice of words in an opinion is extremely important; and the feeling of examiners, who do not use "purportedly", "reportedly" or "allegedly" is expressed quite concisely by Lt. Stanley S. Smith of the Pennsylvania State Police, who says as follows:

"As an example of the effect of choice words in an opinion or conclusion resulting in a practically useful modification I cite this experience:

Early in the establishment of the Laboratory Document Section I interchangeably referred to writers by symbol only in the opinion or by symbol and name thusly:

(*a*) The writer of the S-1 A-G specimen did not write the Q-1 endorsement.
(*b*) The S-1 writer, purporting to be Richard Roe, wrote the Q-2 endorsement.

It was suggested: why didn't I simply say:

(*c*) John Doe (or Richard Roe) wrote (or did not write) the check endorsement.
(To use the simplest illustrations.)

The use of the symbol alone for the writer had a number of disadvantages: the danger of typographical error in volume work; need to seek out the name attributed to the symbol; investigators, banks and district attorneys considered the opinion unspecific; etc.

On the other hand, I had considerable reservations about stating:

"John Doe wrote the questioned Q-1 endorsement" when I didn't KNOW that John Doe wrote the sumbitted (by others) standards and only *purportedly* by that person.

Incidentally, banks and District Attorneys objected to the use of the phrase: "the S-1 writer, *purporting* to be John Doe" as (rightfully) implying that there was a doubt that the writer WAS John Doe; conversely, opposing attorneys took undue advantage of this point.

Therefore, in the usual, particularly check cases, where the short form 1 sheet report is used and all relevant interlocking information can be checked at a glance, the opinion or conclusion may be stated:

(*d*) The S-1 writer, John Doe, did or did not write the Q-1 endorsement.

Thus I *Name* the writer but I'm protected with my mental reservation (unexpressed) that only *if he is* the writer of the S-1 exemplars. This has proved satisfactory on all counts."

In reading the foregoing quotations, here again it is noted that many conclusions are lengthy and may embody within the opinion the reasons upon which the opinion is founded.

Are such lengthy conclusions necessary? An examination of many shows that the principles of clarity and precision have been almost totally lost. On the other hand we do not advocate that a report should be so concise that vital information be omitted.

It is appreciated that many examiners feel reasons are vital for the sake of clarity, and authorities on the subject of technical report writing, state the basis of a conclusion should be contained in the written report. In reading various texts we are struck by the fact that none have mentioned Document Examination Report Writing, and hence Document Examination like many sciences has developed its own unique report problems.

Narrating or enumerating the basis of an opinion undoubtedly serves a purpose, and it is thought this purpose may be threefold:

(*a*) To supply the basis of an opinion to the investigator.

(*b*) To supply the basis of an opinion to the attorney.

(*c*) In some cases it is supplied for the perusal of another examiner who has conducted the same examination with different results.

Could not the reasons for conclusions be included in a supplementary report, furnished only at the request of the contributor or prosecutor?

Thus reports would be broken down into two categories:

(1) A concise report dealing only with the essential information.

(2) A detailed report enumerating the reasons for the opinion and the evidence noted.

The omission of reasons has been a controversial issue, and as we have not had comments from examiners as to why they state reasons, we can only quote the comments of Mr. Kirwan of the New York State Police Laboratory, whose statements are perhaps representative of those examiners who avoid enumerating a basis of an opinion.

> "The reasons for reaching our conclusions are not stated because these same conclusions must be expressed during direct and cross examination of the examiner at trial. Secondly, reasons are unimportant to the investigator, whose prime concern is the result of the laboratory examination and the examiner's opinion. Thirdly, explanation of reasons would tend to make the report lengthy and perhaps confusing to the reader."

Should further standards or exemplars be required, the submission of same could be elaborated upon in the "Remarks" section of the report.

The purpose of the examination and the types of examinations conducted, may be omitted on the basis that they are superfluous, and are indirectly stated in the conclusions.

Expressing in a report the history, or in fact merely knowing the history of a case, would in Canadian courts suggest a source of bias and hence is rigidly avoided, and its value as a part of the report is doubtful save to a prosecuting attorney who should be supplied with this information by the police investigator. Thus it is suggested that this section also be omitted.

Photographic charts to illustrate a conclusion are used for two purposes:

(*a*) To illustrate a conclusion to the investigator.

(*b*) To illustrate a conclusion in court presentation.

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Of the replies received, Joseph Tholl of Chagrin Falls, Ohio, was the only examiner who supplements his conclusions with illustrations, and hence disposes of the necessity of a lengthy explanatory section to the reader. Mr. Tholl says as follows in reference to a section immediately following his conclusions:

"(5) Conclusions or findings stated.

(6) The basis for findings or conclusions stated in detail.

The use of instruments and their significance is described.

The written report at this point is supplemented and illustrated with photographs or some form of laboratory data.

Before using demonstrative photographs and other laboratory data it was found necessary to use long reports which were not nearly as effective and comprehensive as the shorter, well illustrated report."

Some of the other comments regarding charts follow herewith. William E. Kirwan, New York State Police Laboratory, says as follows:

"EXHIBITS:

Only that portion of writing involved in the case which is thought necessary to prove the conclusions of the examiner is prepared photographically for exhibit purposes.

Exhibits do not reflect the source of the specimens. This is testified to by the examiner, and is supported by photographic exhibit of the entire evidence exhibit. This the document examiner uses as a guide during testimony. Each case presents a slightly different problem of introducing photographs into evidence.

Preparation of the photograph is planned accordingly.

Ten copies of the exhibit are prepared and are distributed as follows:

6 to the 12 jurors (2 jurors share one exhibit)
The Justice of the Court
The District Attorney
The Defence Attorney
and the Laboratory Examiner.

Enlargements are usually held to 2X, unless conditions warrant further enlargement. The same letters and letter groupings are placed in vertical order rather than horizontal juxtaposition."

The reply from Dan Houser, Detroit Police Department, says as follows:

"Photographs are not always prepared for Court in our Handwriting Cases, usually we testify to our opinions using the original evidence only. We still feel the best evidence is the real or original evidence and the Courts go along with us in this manner of presenting our findings. It seems to get away from legal objections to photographs being a possible distortion of the original and not showing the evidence as it originally existed. Of course there are exceptions to this, the enclosed Court exhibit being one and an example of the way photographs are prepared and presented.

You will note the numbers printed in ink on the photograph; this was done for your benefit to show some of the points stressed in our identification. These numbers were not on the original because sometimes this method has been considered prejudicial to the defendant in front of a Jury, so we do not mark our Court exhibits in this manner."

The following illustrations demonstrate various types of charts used. The examiners' comments on each are noted thereunder.

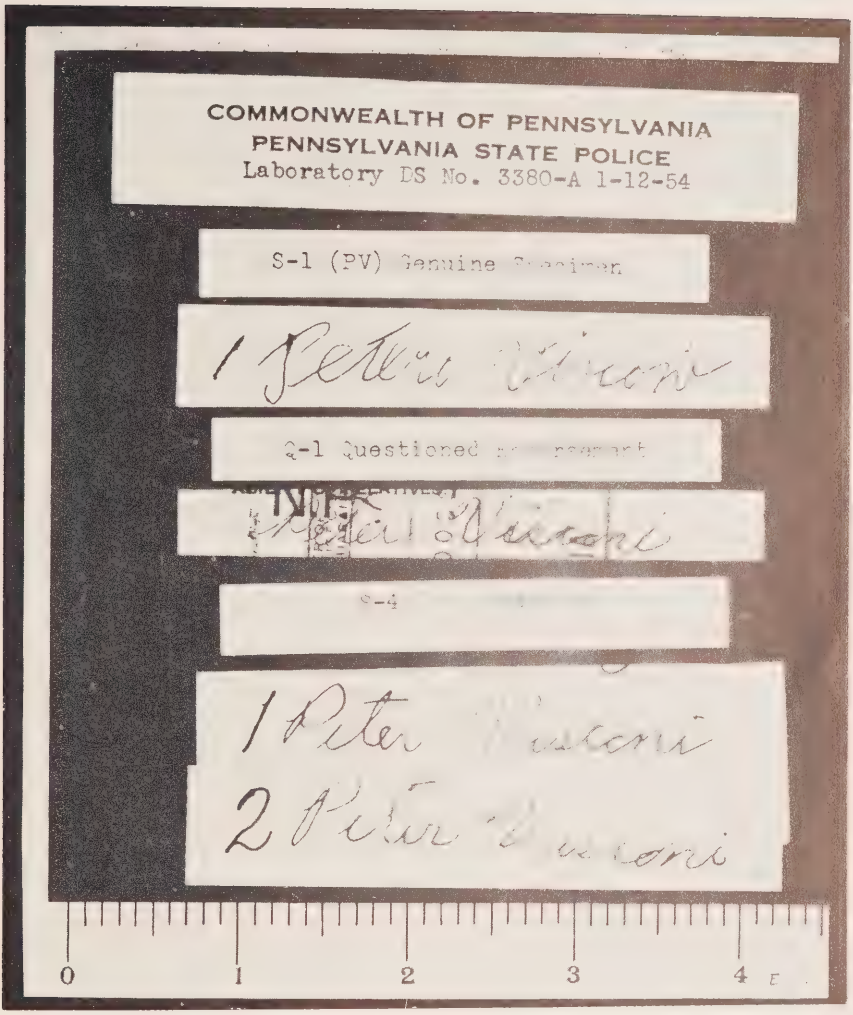

Chart No. 1

"Found useful to show the payee's signature for the convenience of a Judge, jury and attorneys as a first step illustration of a forgery existing." (Stanley S. Smith, Pennsylvania State Police.)

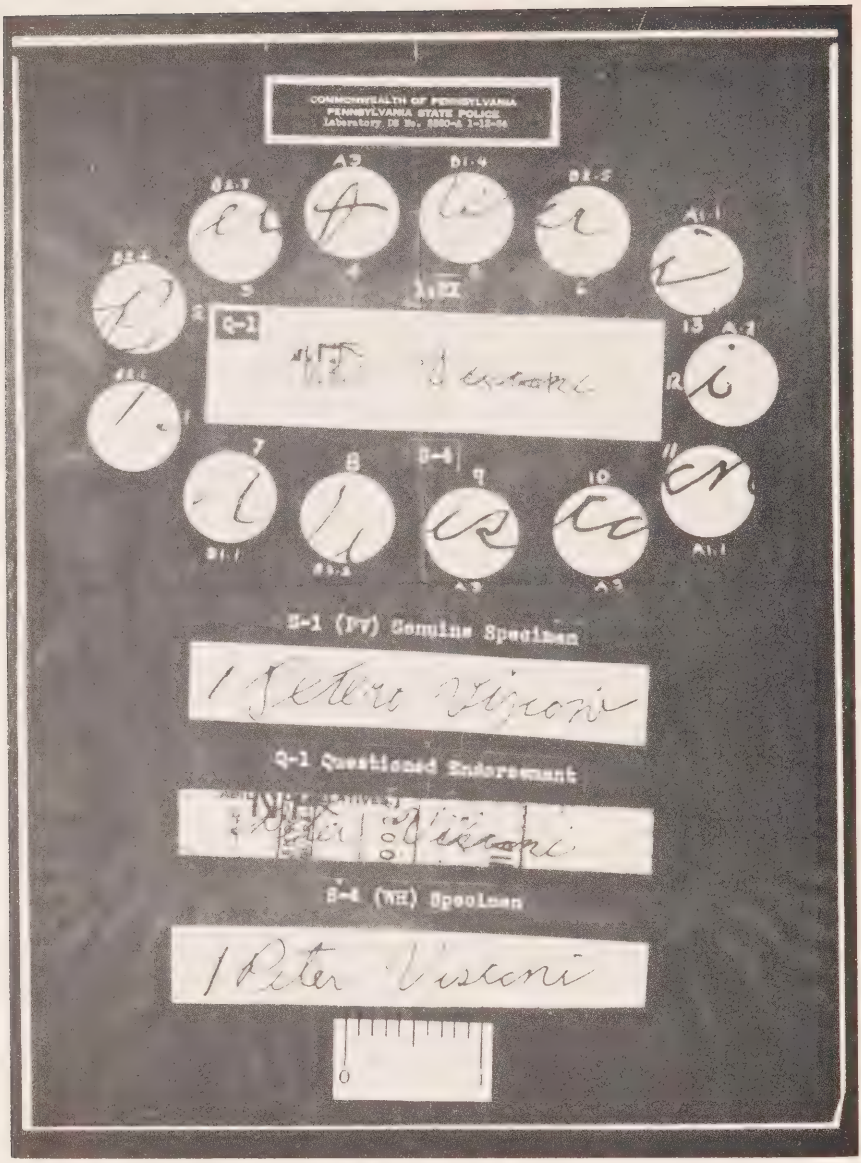

Chart No. 2

"Original new arrangement of photo-chart with questioned signature surrounded with doubly-enlarged (2X) cut-out disks from specimen by suspect, to meet the need of illustrating characteristics not appearing in only one or two exemplars, yet present in a larger number. The disks are numbered both serially and to indicate source of origin. The payee's exemplar with questioned endorsement repeated followed by an exemplar from suspect follows. Suspect's exemplar (single) illustrates how one specimen in this case failed to show many of the comparable characteristics present in all his specimen. The black background tends to dramatize the arrangement." (Stanley S. Smith, Pennsylvania State Police.)

Lt. Smith: This isn't a question of signature. It was necessary to take features as were reflected by the disks from ten specimens that had been submitted and I feel we were able to effectively illustrate those characters in that way. This represents the work of a photostat. There has not been too much said about photostats and I hear many comments on the use of photostats around here which are usually discouraging. That is true, it depends on the quality of the photostat you have. We have one of these large photstats—or reasonably large—18 x 24—and we get a tremendous amount of good use out of that photostat and we can get some fairly clear illustrations by treating it as a camera. In this case of the questioned items, you see the backstaffs do obscure some of the lines and photographically we could, of course, have eliminated them by filtering but to see how vertical the photostats can be, I think there are quite a few very good illustrations. You would have one disadvantage in that the backstaff does not show in this particular exhibit. If this were cut out by using a cork bore—a Laboratory cork bore—it is very easy to use and the idea of using this in that way for purposes of making a pleasing composition perhaps you might say it was suggested by the fingerprint people in Cuba who do the same thing that I have done here by taking a two time enlargement over the specimen fingerprint for example. They will cut a disk out of the characteristic that they want to feature to show a similarity and then they will relate that disk to the enlarged fingerprint in the centre—that is where I borrowed the idea from and I thought it would be an effective way in making a chart. I haven't done too much of this in that way but it seemed to be effective here; otherwise it is a time consuming thing, of course, and where you have a large volume of work to do you try to save time. The previous chart is the way we usually illustrate cheque cases because of their volume it is the simplest way and in this case we thought that this was a useful change.

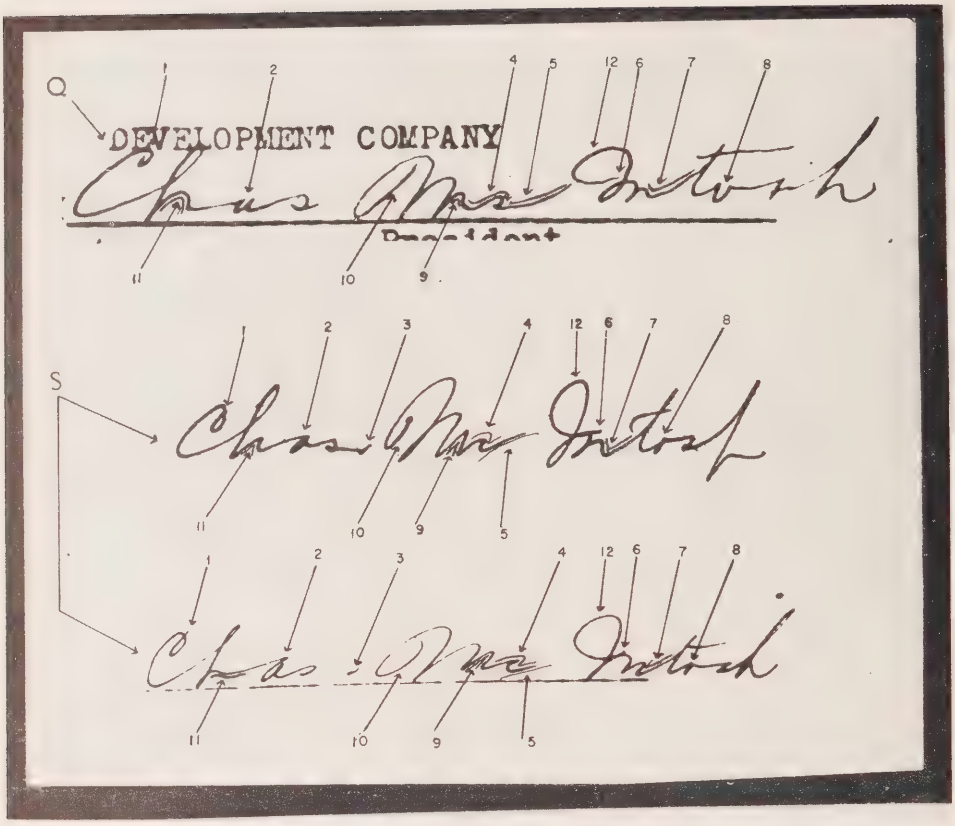

Chart No. 3

"1. Photographic enlargements deemed pertinent in case are placed on folder for standard sized file cabinet.

2. Can be readily filed with other case material.

3. Eliminates cost of large exhibits of photographic enlargements.

4. Enables Document Examiner to copy on a blackboard a facsimile of writing involved. This focuses the attention of the Judge, jury, Counsel, Plaintiffs and Defendants, on the vital subject matter.

5. Makes the Document Examiner's testimony more easily understood, places the Examiner in a position relative to that of a Lecturer, Professor or Teacher, a status of dignity and respect, desirable in any Court or conference.

6. Small exhibits can be studied with ease by the Judge and jury during the trial, also in the jury room at close of trial.

7. Conferences with the Attorneys who retain my services have approved the procedure as paragraphed." (Robert E. Moore, Detroit, Michigan.)

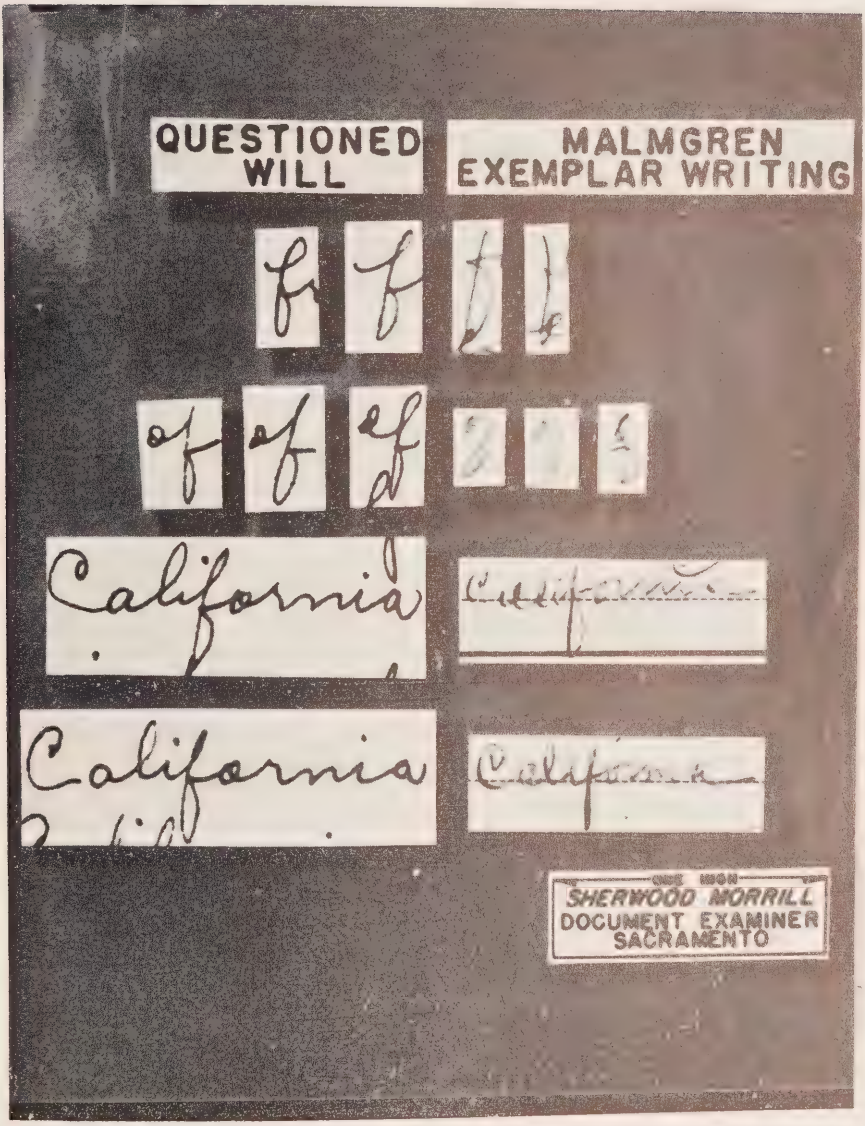

Chart No. 4

". . . illustrates deceased woman did not write the will." (Bureau of Criminal Identification and Investigation, Department of Justice, California.)

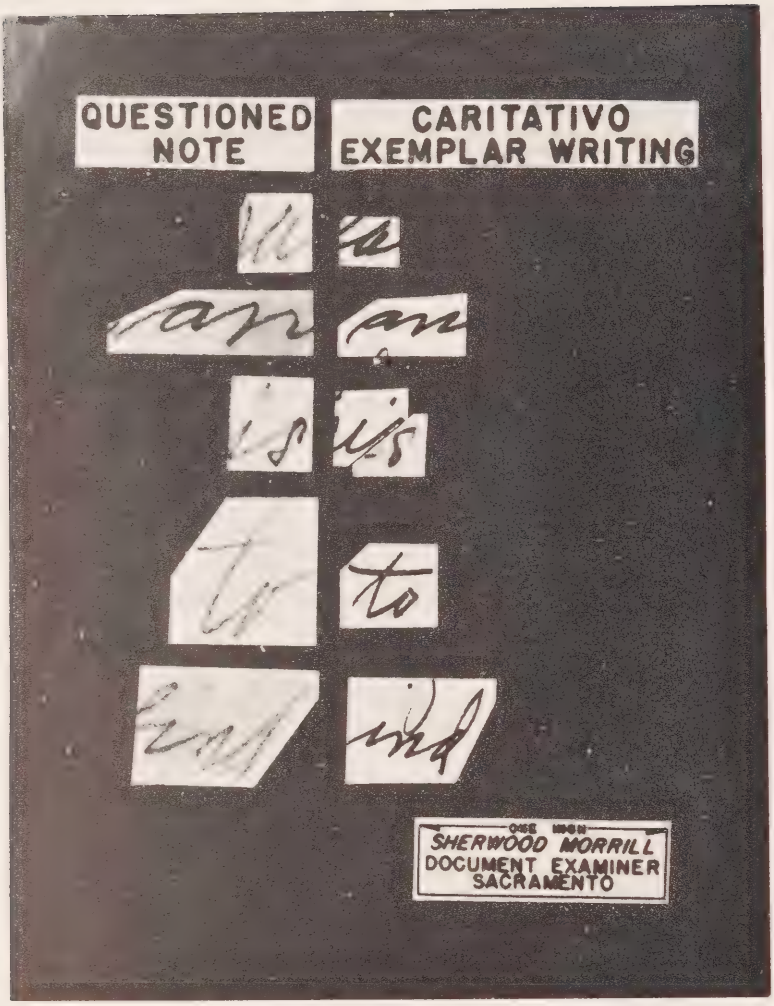

Chart No. 5

". . . illustrates the fact that the defendant actually prepared the note." (Department of Justice, California.)

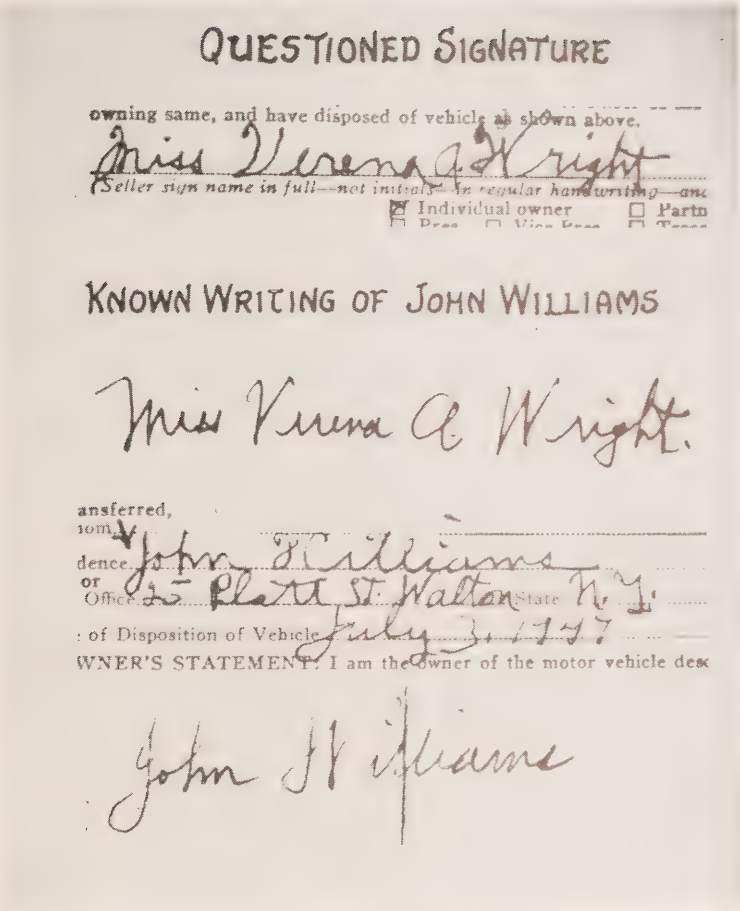

Chart No. 6

"The same letters and letter groupings are placed in vertical order rather than horizontal juxtaposition, because in our opinion it is easier for the human mind to retain its concept of form in the vertical plane rather than in the horizontal." (William E. Kirwin, New York State Police Laboratory.)

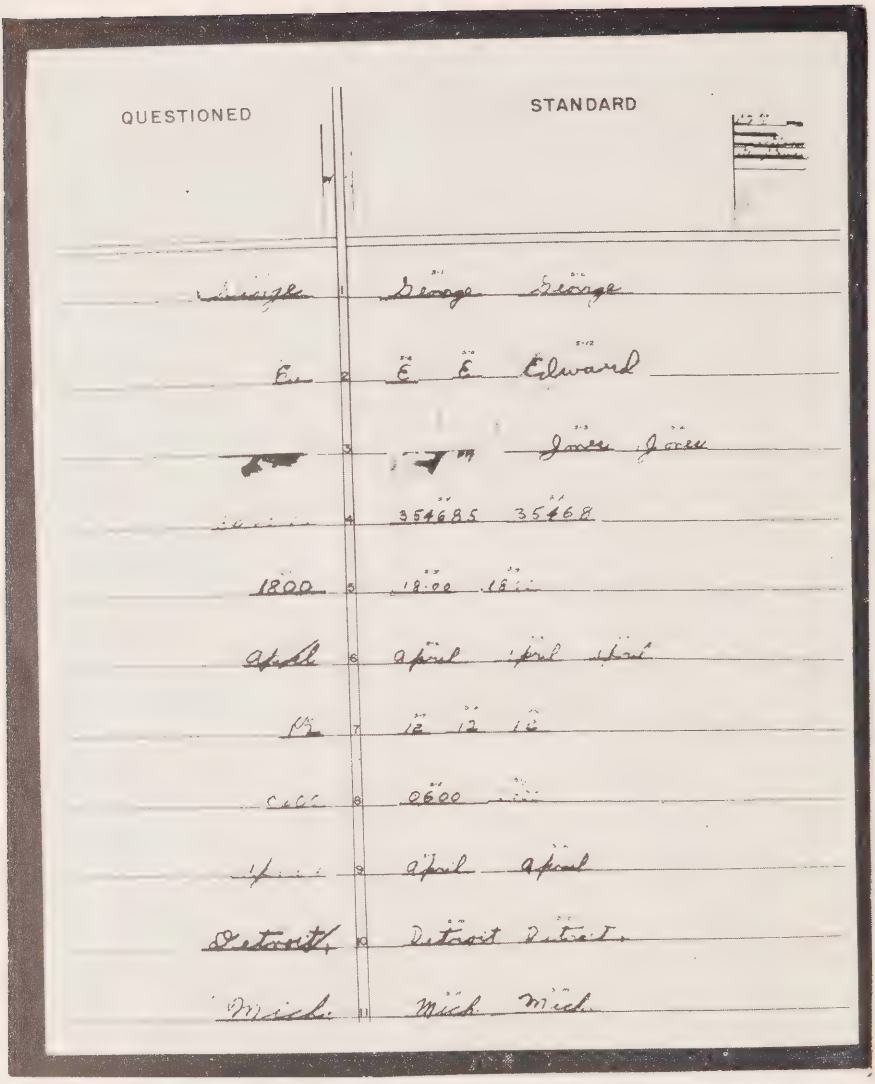

Chart No. 7

"The questioned document is produced in the upper left. The standards in the upper right. Lines on the chart are numbered and reference is made to the chart as opinions are given." (William Dienstein, Fresno State College, California.)

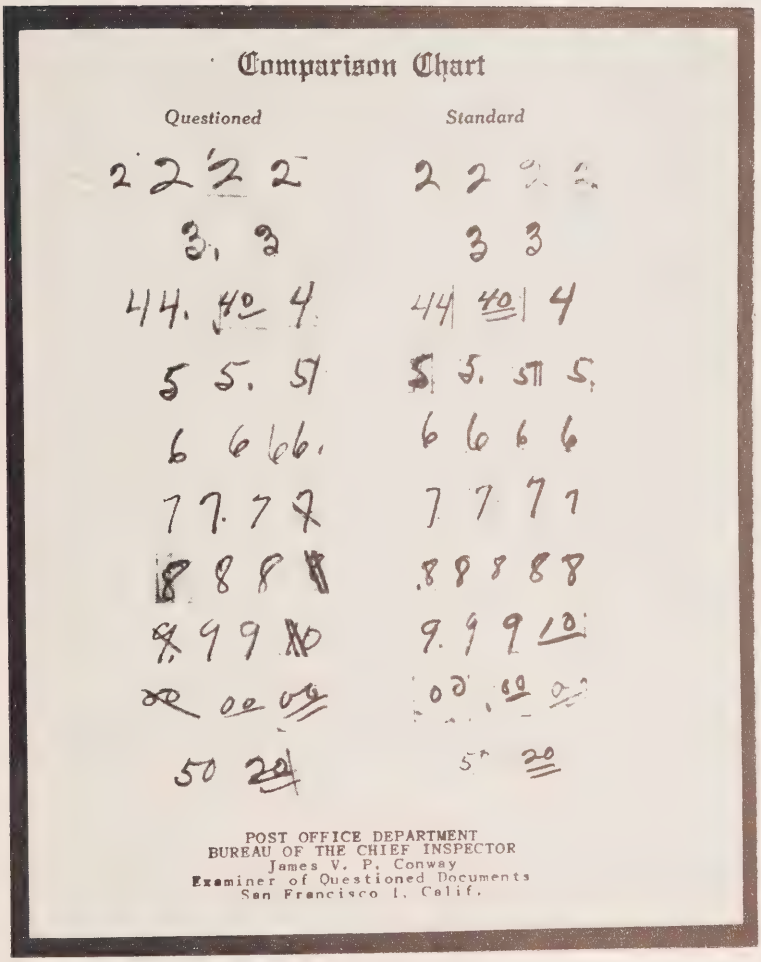

Chart No. 8

(James V. P. Conway, Postal Inspector, California.)

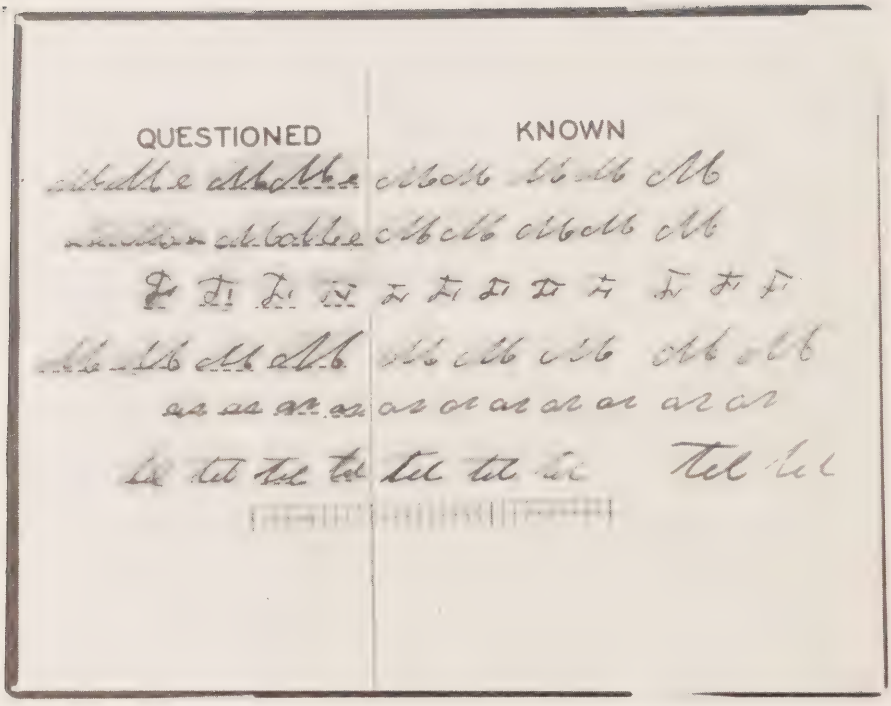

Chart No. 9

Cut outs from the questioned and known writing are pasted onto a stiff mounting board in juxtaposition, thus forming a Master Chart.

The master chart is photographed and from the negative so obtained a large chart (approx. 30″ x 40″) is prepared to be used by the witness giving the document evidence. Small contact sized charts (approx. 8″ x 10″) mounted on stiff cardboard are prepared of the same chart for distribution to the jury, counsel and presiding official(s).

(R.C.M.P. Laboratories.)

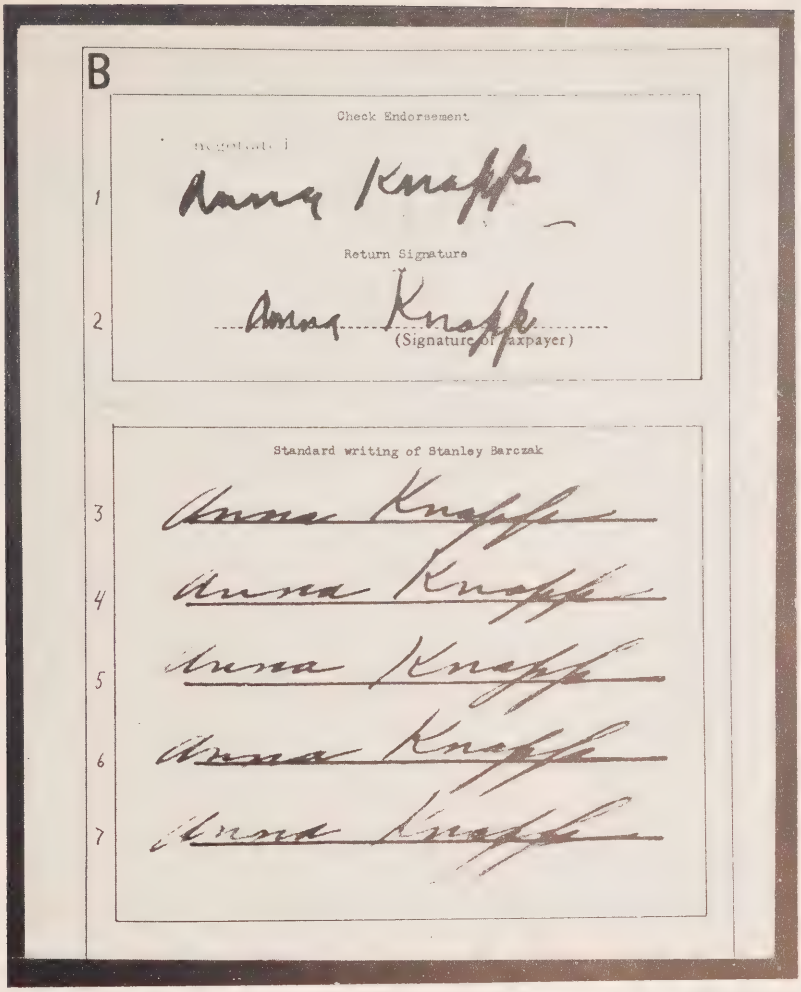

Chart No. 10

"Our practice is to prepare charts similar to these in sufficient number to give a chart to each 2 jurors and copies to the judge, and attorneys on both sides of the case." (Alwyn Cole, Treasury Department, Washington, D.C.)

As seen, charts essentially fall into two classes, the horizontal presentation and the vertical presentation. The methods of illustration have all proven adequate, and we do not suggest any changes toward a uniform chart. We place them before you for any improvements or comments which you may care to render.

With respect to the comments of police investigators in Canada, we contacted all major police departments through the medium of a questionnaire, inviting comments on the following points:

(*a*) Interpretation of probabilities (subject of subsequent paper).
(*b*) Extent reports are used as an inducement of a guilty plea.
(*c*) Clarity of reports in respect to reasons for conclusions.
(*d*) Are cases submitted only when court action is anticipated.

We found that the majority of investigators have used our Document Examination reports as a means of inducing a guilty plea, insofar as the accused is advised that the Document Examiner has identified his writing as being that of the questioned, or that the investigator will introduce handwriting evidence.

Our statistics show that approximately 50 per cent of the investigators contacted, submit only those cases wherever it is felt the evidence of the examiner would be required in a subsequent court action. Our reports are so designed that they may be used in court without the supporting testimony of the examiner. Investigators in Canada prefer, however, that reports be placed in two classes:

(*a*) Those in which court action is anticipated; and
(*b*) Those cases submitted for investigative assistance.

Approximately one quarter of the replies received from investigators at the time of writing state the reasons for a conclusion decrease the value of the report and tend to make it confusing. We note that these comments are generally from Police Departments whose investigators seldom require a submission of exhibits to the laboratory, and hence their comments may be generally considered as the interpretation of persons submitting cases for the first time.

In conclusion we suggest, particularly to examiners employed by police organizations, that reports be concise and contain only the following points:

(*a*) Subject or reference.
(*b*) To whom directed.
(*c*) Brief description of questioned and known standards.
(*d*) Conclusions.
(*e*) Remarks.

We suggest that the following be omitted entirely when reporting to Investigators:

(*a*) Reasons for conclusions.
(*b*) Purpose of examination.
(*c*) Examinations conducted.
(*d*) History of Case.

Your comments and questions are now invited.

Bibliography:

Turner, Ralph F.—Forensic Science and Laboratory Technics, Clark C. Thomas, Publisher, Springfield, 1949.

Rhodes, Fred M.—Technical Report Writing, Mel Grow-Hill New York, 1941.

Discussion of Constable Fay's Paper

Mr. Doud: Do you use those as subject headings? Are they actually put on your report subject and description of document?

Cst. Fay: Actually our Laboratory reports are headed, insofar as we have our "re" line at the top of the report and, of course, to whom directed. We have the purpose of the examination under a heading, as well as the conclusions and remarks and we also have the data under a heading. We actually have a form under five headings.

Cst. Hodgins: Do you think that the purpose is so lengthy a thing that it adds to the complication of the reports. Don't you think it is a very necessary part of it?

Cst. FAY: To my way of thinking it goes without saying—the contributor submitted the case, he knows why he submitted it and although it is a very small section it is perhaps these small sections that not only take up the examiner's time in writing them out but the clerical time as well. I think it is irrelevant to the report.

Cst. HODGINS: I don't think the investigator always does know his purpose—very often you discover a number of things which he has never thought about—is that not correct?

Cst. FAY: You may conduct examinations which he hasn't thought about but he did not submit the case for that purpose. What you have done and why he submitted it are two different things.

Cst. WRENSHALL: What are you going to do with the contributor who submits specimens and requests that the handwriting be analyzed. He doesn't really know what he wants and a brief description of what you are going to do, that is for example, comparing the handwriting, comparing typewriting, etc., in my mind does not lessen the value of the report and make it more specific.

Lt. SMITH: My experience is that all that is usually incorporated in the transmittal information—a copy of the investigator's report frequently follows. It is included in the request for examination. I frankly ignore, almost, the request of the person—I give it consideration—but we find we often do much more than he has any conception we can possibly do; so you just make the investigations in the laboratory of the paper and let him be concerned with the investigation out in the field. He may ask for one specific point which may or may not be the only thing he can think of and you will very often find that the purpose for which he submits the case you may not give him the opinion he hopes to get, but you give him something far more valuable and probably more conclusive.

Cpl. HEAD: Regarding the examples of charts that you have, I read in one of the periodicals of a case involving a questioned signature where the cut-outs from photgraphs of the known exhibits submitted were pasted together forming a composite signature, and it was remarkable the similarity in the two signatures afterwards. Has anyone here used that procedure?

Mr. WALTER: Yes. That can be done in both civil and criminal cases. I have used it in criminal cases with good results. The Jury can see very clearly the similarity.

Mr. DOUD: In Milwaukee in the Hauptmann case—Mr. Sellars, now out on the coast, made a composite signature of Hauptmann from the questioned material. He compared one of Hauptmann's genuine signatures with the composite made from the ransom notes and his remark was that so convincing was the evidence that Hauptmann's wrote these ransom notes that he might as well have signed them himself and then he used his signature to illustrate Hauptmann's own name.

Mr. THOLL: To get back to the original subject again, in my position as being both a police and a civilian examiner, I find that you need different kinds of reports. Our routine report has to be very precise. You can just make a very bare mention of the pertinent data—just include enough references in the way of description or laboratory numbers to know what you are talking about so that the record is clear and then, of course, you state a very brief conclusion which it is assumed is more or less qualified. That is sufficient, otherwise, you would be snowed under with from five to fifty cases coming through in the course of a day. On the other hand you get cases which are much more involved and unless you documentate and very clearly, explicitly and specifically state all the pertinent details with the passage of time those

things are likely to become very vague and disorganized and for that reason a somewhat more elaborate but not too lengthy a report is prepared along with certain basic photographs and that serves a very useful reference purpose where a case comes up—say five, six or eight months, or a year later. I had this experience recently and I would have been confused myself except for the fact that we had all this data awaiting us and we were able to go through with it; otherwise, there would have been a lot of confusion. Thirdly, the civilian report—when you are dealing with Attorneys and other people you have to practically write a miniature book in which everything is very explicitly stated and described. You also have to translate your technical terms. You have to list anything to do, from the purpose all the way through and you have to practically spell out the entire case; otherwise, it would not be very coherent to the layman. I think you have three basic kinds of reports.

Cst. FAY: I wonder if I could call upon Dr. Miller of the F.B.I. to give us a discourse on his type of reports. He is perhaps from the Laboratory which handles the largest number of cases in North America and we did not include that type of report in our paper.

Dr. MILLER: The subject matter of a report is a pretty long one. We write the same kind of report to every contributor. Our reports are basically made up of three parts—they have the description of the evidence, the conclusions and suggestions. The description of the evidence is limited and brief. The conclusions are equally limited and brief, consisting of three possible categories —one is an identification which is obvious from the wording of it. It simply states that it was found or concluded or the handwriting examination disclosed that the questioned material was prepared by the individual whose known specimens were submitted. The second conclusion is, of course, diametrically opposite—that is, it was concluded or the handwriting examination disclosed that so-and-so did not write the questioned material. In between we have the so-called "no conclusion" report when we say that we could not reach a conclusion. We set forth the reason for such "no conclusion" either because the questioned material was too limited, because the known material was too limited or whatever the reason may be. Every time we set out a "no conclusion" report, wherever possible we set forth the results of our findings—that is, we say that we saw similarities or differences. We do not flavour our reports in any manner to show possibility or probability; we merely report facts just as we do in every investigational report. In other words, when we say we reached "no conclusion", we have the responsibility of advising the contributor of how we lean on this subject as an investigative lead and not for use in court. Therefore, we can say we find differences which are, of course, a lead to anybody who reads the report, indicating we are leaning towards an elimination. We can express it a little more strongly and say we saw significant differences or we saw significant similarities, and insofar as the 'remarks' are concerned or the 'suggestions' in those instances where a positive decision is not reached, we can make proposals as to what can be done to permit a possible conclusion one way or another. We never instruct the field or any contributor as to what they should do—we merely set forth a suggestion. In the years gone by we have suffered tremendous growing pains. We used to say that there is a strong possibly that "so and so" did this or that. What has happened is that some zealous prosecutor, sheriff or our own agents "stuck the man in the jug" and at that point he wouldn't furnish any more writings so then they had a man in gaol and our opinion couldn't support the gaol arrest. That didn't happen to us, but . . . as a result of a couple of instances like that our reports are very concise and we don't flavour them in any way. We do believe that the shorter, the more concise the reports, the better they are. We don't go to writing a book on any of our reports. We feel that evidence, as someone previously

pointed out, can be brought out either in direct or cross-examination, if so desired. I have a slide to show the type of chart which involves the use of a photograph and an enlargement of the entire document. Of course, if it is a matter of only signatures or endorsements, the problem is a very simple one. In that case we make an enlargment as big as we think it is necessary to warrant a proper demonstration. To a large degree the enlargement will range from five to ten diameters. If it is an extortion letter or something about ordinary letter size paper, then we usually enlarge the whole thing. We can make our enlargements forty by sixty inches. As to the "purpose" of the examination I can see no reason for putting that into a report. If a man asks for an examination obviously that is what he wants and I do not see why he should put it into a report or why we should. If he writes a letter we assume that he wants an examination. I don't see that that would serve any purpose. Has anyone any questions or observations on what I have said?

Cst. HODGINS: Do you ever get called to court on your "leanings" as you chose to call them?

Dr. MILLER: Yes. On occasion we have been requested to present the reasons for our leanings. That happens usually in extortion cases. A good illustration would be something like this—there are three suspects, let us say, in extortion cases. We have been successful in eliminating two of them on the basis of handwriting but for one reason or another the disguise is so heavy or the subject failed to give appropriate standards, that we could not definitely identify anybody. The prosecutor will then say 'what are the possibilities of getting one of the agents from the Laboratory to testify first to the non-identification of these other people and then secondly point out what he actually found?' In cases like that we do go to court and we do testify to an indecisive conclusion but it is all part of the picture of circumstantial evidence and it all adds up. We have eliminated those on whom the individual has cast suspicion. Our document examiners testify with enlargements of the questioned material and of the known material. We have steadfastly maintained throughout our experience that we have to show the prosecution and the defence the whole document without cutting out any parts of it or without showing or attempting to show our conclusion one way or another. We have the whole paper, the whole document—everything—here. The only thing we put on it aside from the photograph are red markings; we don't have any specific number of them. We don't have twelve points of comparison as we figure we do in fingerprint identification. What we have is necessary to establish the identification and these little red markings serve as indicators, for instance, here (indicating) is No. 5, No. 7, No. 6 etc., and similar markings are shown on the right. There is no legal requirement which says you should photograph or enlarge the whole thing so usually in a typewriting case, instead of enlarging the whole document, we take a section and enlarge that. We find a typewriter enlarges approximately eight times whether it is elite or pica style type and a demonstration of that is shown in front of the Jury. We have experimented also considerably with making up exhibits and booklets for the Jury, the Defence Counsel and Prosecution in court and we do use them in certain types of cases. On the whole this represents the experimental procedure we have adopted and followed over the years. Everybody has his own choice—if he wants to cut out these little letters, words, that is up to him There is no rule or regulation.

Sgt. DUXBURY: In line with the remarks of Dr. Miller, I think the conclusions are that each individual examiner and department has their own preference and their own reasons and their methods of charts—probably we could all learn a great deal from an interexchange of this information.

The Identification of Rubber Stamps

BY

LIEUT. DAVID J. PURTELL

Chicago City Police

Chicago, Ill.

Rubber stamps are a very common and inexpensive item which may be easily acquired. In addition to their being used extensively in business and shops they are also marketable as a toy. As a labour and time saving device no other product capable of conveying a message on paper can compare with a rubber stamp insofar as its initial cost and utility are concerned. This, coupled with the fact that its size is small and no special skill or training is required for its usage, makes the rubber stamp a popular device. Because of these favourable characteristics it has become a tool of the forger and cheque passer.

This paper will cover only those rubber stamps which are usable on paper, by hand, and those which the Document Examiner will, in all probability, encounter (Figure 1). Though no attempt will be made to discuss any of the special marking equipment, such as rubber printing plates, rocker stamps, speed rollers or plastic stamps, it should be noted that these items are manufactured in a similar manner to the rubber stamps under discussion.

The more reasonably priced rubber stamps contain three basic parts: the handle, the mounting and the rubber die. The more expensive models have in addition a rubber cushion and a title. As regards the fabricating of either of these makes, most manufacturers purchase all of the parts except the die and title.

Though all the parts may play an important role in aiding an investigator in locating the maker, we are primarily concerned with the die in that it is responsible for the impression. The customary way of fabricating a die is by setting printers steel type, pressing it into a soft material which will harden and form a mold containing an indented impression of the type. Later, rubber is vulcanized in this mold to form the die (Figure 2).

The manufacturer is not limited to steel type for he may use any material that is available to the printer. In setting up a chase, a rectangular steel form, many different materials are assembled (Figure 3). In the chase shown in the photograph, there are steel type, Ludlow type, and brass cuts. Besides these, zinc etchings, wood type, wood cuts, and type from linotype and monotype machines may be assembled. The zinc, brass and wood cuts, being permanent set-ups, are applicable when the objective is to manufacture many stamps. The softer metals, such as brass and zinc, are limited in that they develop defects readily. For instance in Figure 4, we see a brass cut displaying many defects. To make deep impressions for large sized characters, 1½″ or over, wood type is employed. Steel type and machine set type, on the other hand are usually assembled for one particular order.

The setting up of type by a typographer allows for many points of identification because he has at his disposal the different kinds of type listed above, as well as the style, size and the arrangement. In filling an order, one typographer will prefer one arrangement while a second typographer

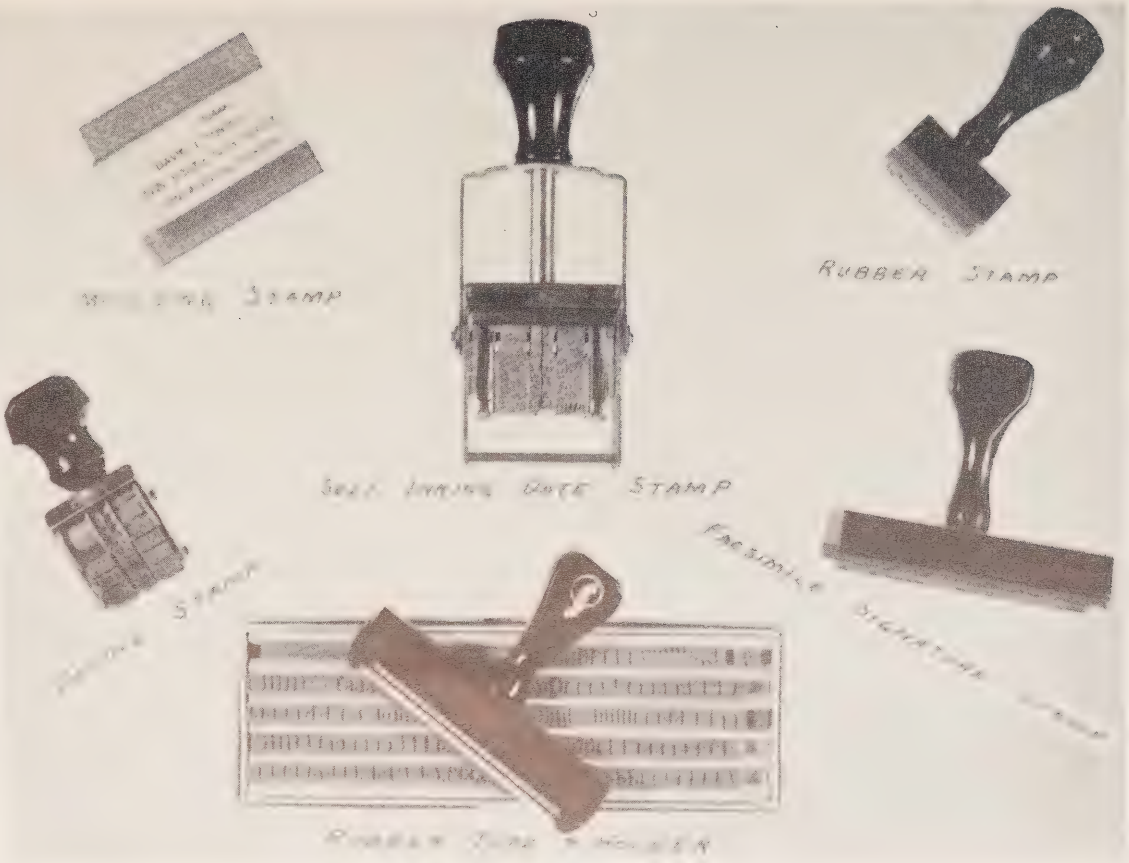

Figure 1

STYLES OF RUBBER STAMPS

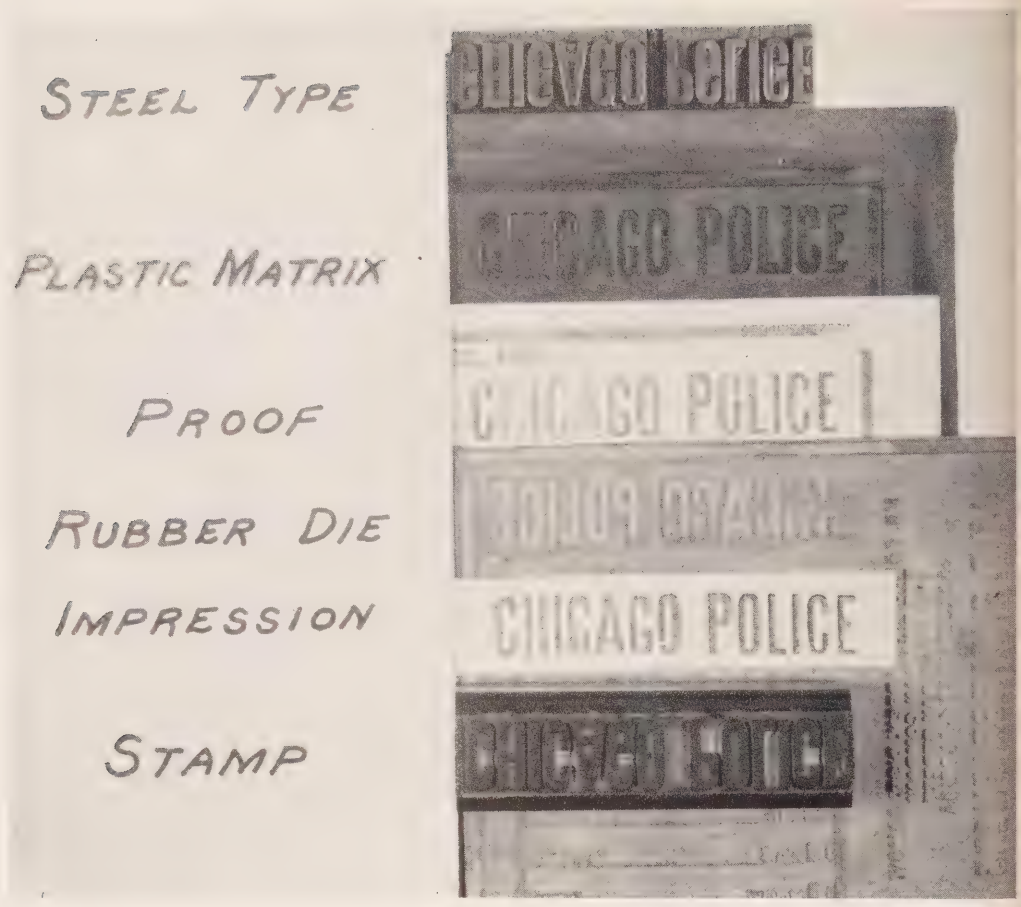

Figure 2
STEPS IN MAKING A RUBBER STAMP

will choose another. No two ever seem to follow the same procedure. Consequently, one can recognize the other's work immediately. These are a group of men who are as creative as artists and hence claim to be artists in their own right. One typographer compared the men in his field to artists painting a scene. Where artists differ in colour, composition and proportions, the typographers differ in size, style, arrangement and spacing of the type.

In duplicating another set-up, it would necessitate obtaining the identical pieces of type and then taking care to place the type and spacers in their exact location. This would be a tremendous task since duplicating would be far more difficult than if the typographer approached the problem using his own creative ability.

After the chase is set up, the type is inked and proofs are taken. These proofs are used to check the accuracy of the set-up as well as for permanent records of the company. Some firms cut the proofs and use them for the title strips on the finished stamp, while other firms take the impression from the finished stamp and insert this in the mounting for the title. We are interested in both forms for the first method reveals defects in the type

Figure 3
ASSEMBLED CHASE AND PROOF

while the second method indicates the defects on the completed stamp. It should be noted here that the title strip, being the original impression, should be used as the starting point in making a comparison.

After the chase has been assembled and proofs have been taken the next step is the making of the mold or matrix. For a number of years the trade used a clay or plaster mixture exclusively but today this method is employed only for certain types of stamps or by firms which have not changed over to plastic. It was more expensive to use because it required an expert to prepare a mold in that the clay had to be mixed and a series of impressions taken as it was drying. This process has been replaced to a great extent by plastic matrices wherein the type is pressed into the plastic under heat and pressure. These molding processes are alike in that they will pick up the impressions of the type as well as their imperfections. Defects may occur in this process, such as too much pressure causing the type to spread, breaking down of the walls between letters, and dirt and foreign material collecting on the clay or plastic. The abrasive action of plastic and the resistance under pressure cause wear of the type. Due to the high degree of heat needed to soften the plastic, the metal type is likewise nearing its softening point and therefore develops defects.

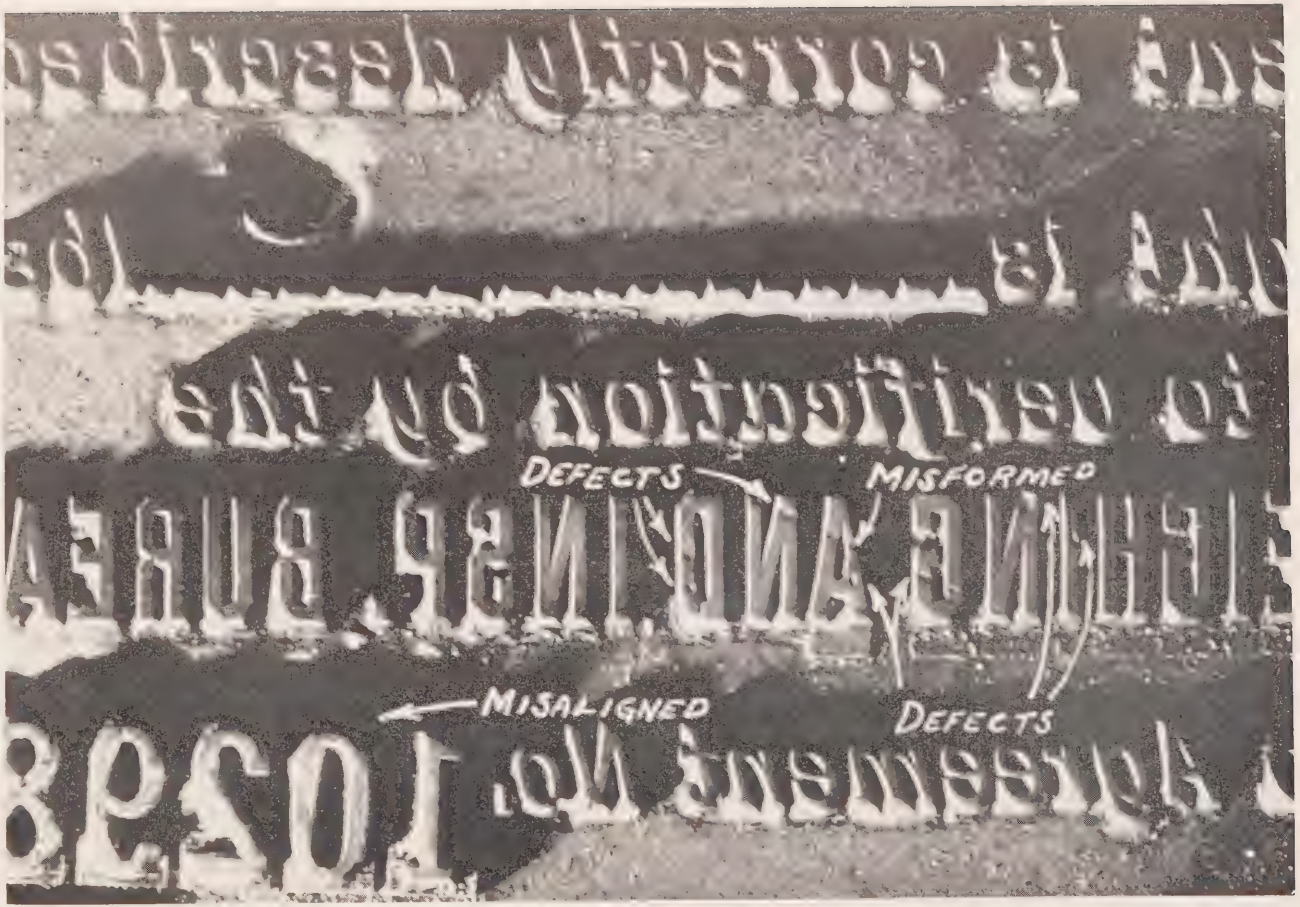

Figure 4
DEFECTS IN BRASS CUTS

There is still another style of type known as "Evatype" wherein the characters are sunken. When these types are assembled they form the mold and eliminate one full step in the making of a stamp.

Making of the die is the next step in the procedure. Using the same machine that was used to prepare the matrix, raw rubber is placed over the mold where, under heat and pressure, the rubber is cured and vulcanized into every crevice. Defects can form in the dies during this process as a result of foreign material settling on the mold and from improper timing, heating or pressure. After the die that covers the full chase is completed the individual dies are separated by cutting and are then glued to the mount to form the stamp.

Points of identification develop as a result of carelessness during the cutting operation. Two most serious offences are the removing of parts of letters and leaving the end letters with very narrow shoulders. Such shoulders lend little support and consequently they tend to wear faster than the rest of the stamp. Other inadequacies, such as the misalignment of the die with the edge of the mounting, twisted dies, and dies mounted in reverse of the handle, may occur during the mounting process. Also, an improper bond existing between the die and the cushion might present itself, allowing the die to work loose. Under this condition, it would not stamp properly for the loose edge would tend to render a smeared impression.

The daters are one other kind of stamp which we will encounter (Figure 5) and which are sold by every stamp manufacturer and stationery store. They have only a few parts, namely, dies, frame bridge, knurled wheels and handle. The dies are made in similar manner to the other rubber dies but the strips are different in that they are made vertically and are later glued and vulcanized into a ring to fit the dater. One manufacturer of daters uses a special hardened steel type which is pressed into a soft alloy metal to form a mold. Such a mold will render more dies than those made by plastic or clay.

A variation of the dater is the self-inking dater which includes its own stamp pad as well as cushions for mounting additional printing dies. Besides the date, the assembly of these machines also furnish many points of identification. These include the additional dies, the dies in relation to the date, dies in relation to the edge of the cushion (providing marks are left by the cushion), the indented impressions of the feet (providing the machine was used on paper above a soft material), and the relation of the dies in regards to the feet impressions. The indentations made by the feet indicate the size of the machine.

While on the subject of the dater, an indistinct impression can be rendered when the mechanism becomes twisted due to hard usage. On the other hand, rust on the bridge restricts proper movement of the bands and will cause them to split and tear.

One might conclude that the dater, being the most common of all the rubber stamps, would be the most difficult to identify. However, considering all the combinations of dates (Figure 6) and the different sizes and styles of type that can be assembled, one must conclude that a vast number of class characteristics can be obtained. From this standpoint, then, we have a better start in an identification as compared to other office equipment. The combination of possibilities will also expand when a bridge for mounting additional dies is assembled for then it must be considered that most manufacturers have between 200 and 400 type faces or fonts. From these many general class characteristics, we can then examine the stamp for individual die defects that are imparted during the making and that occur from wear and usage.

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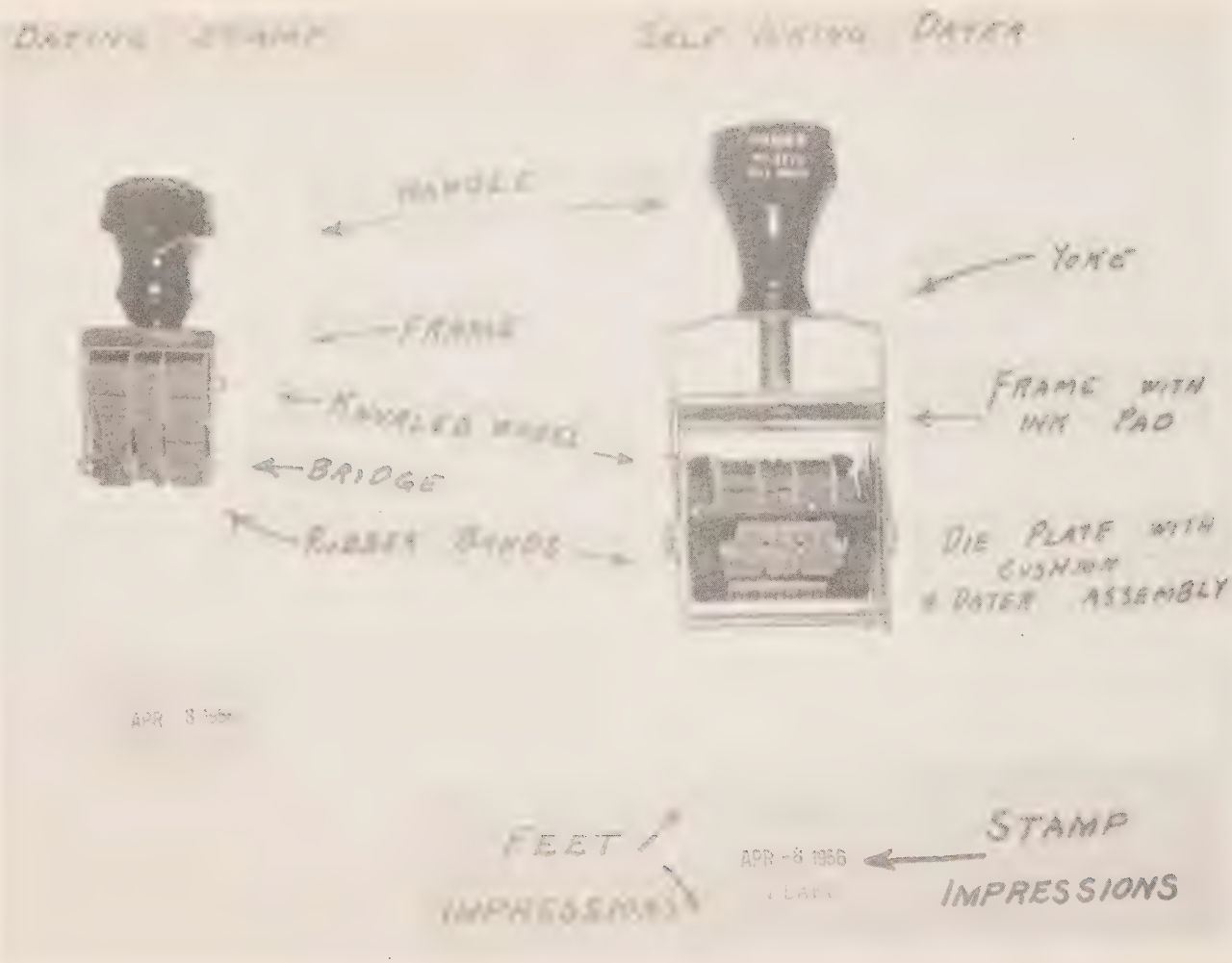

Figure 5
DATER AND SELF-INKING DATER

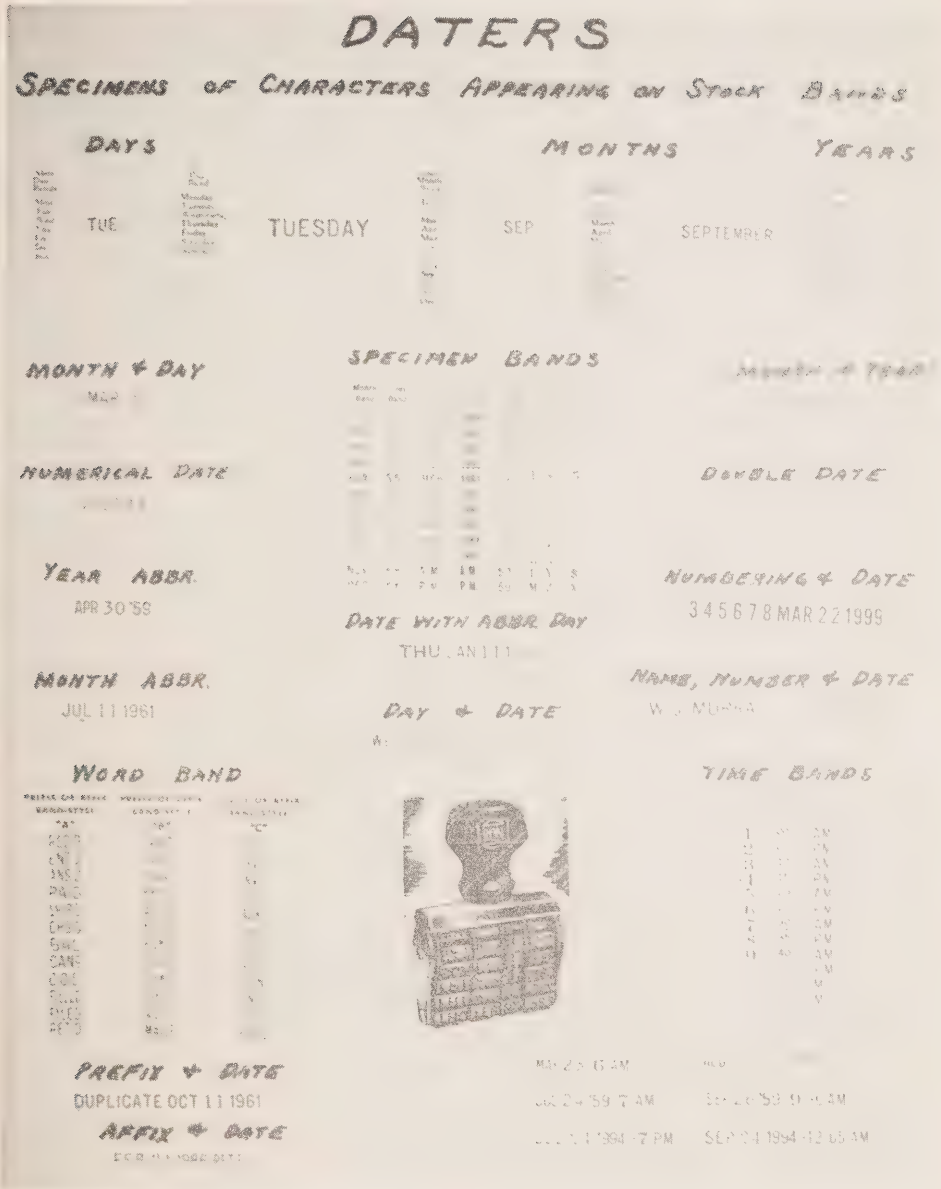

Figure 6

COMMON STYLES OF DATER ARRANGEMENTS

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Each person who uses a stamp will handle and care for it in a different manner in that each will cause a different type of defect to occur; consequently, imperfections occurring from wear and usage would be too numerous to mention. However, a qualified examiner making a comparison could readily discern the defects that develop after the item has been made.

Other points to be considered are the care of the pad, the type and colour of the ink. Oil base ink causes rubber to swell, forming all sorts of abnormal shapes and forms, while dirt, grit, and lint collected on a pad can be picked up by the stamp and left on an impression. Also, foreign material picked up from the pad accumulates in and between letters on the stamp and renders an indistinct impression. Further, the quantity of ink in a pad also determines the density of an impression.

The lines are especially important in that they are usually thin and easily damaged. They will also show the joining together of brass strips when more than one strip is used to form a line. Other points of identification are the irregular butting together of strips when two lines are to meet or cross.

Another style of stamp is the facsimile signature stamp (Figure 7). These stamps can trace their history back to xylography, one of the oldest crafts in existence. Thousands of years ago, the Chinese made wood carvings similar to those being made today. To make woodcuts the finest of boxwood is selected and cut type high. The signature to be copied is placed against a dampened piece of wood and whilst under pressure the signature is transferred in reverse on to the wood. The signature can also be placed on the wood photographically in an enlarged or reduced form. After the signature is situated on the wood, a routing machine removes most of the wood around the lines to a predetermined depth. Finally, with the use of sharp knives, the lines are straightened and cleaned by hand. These cuts are processed as regular type, and numerous dies can be obtained.

A second method of obtaining a facsimile signature stamp is by copying a signature on a piece of wax paper with hexograph ink and transferring it to rubber. Then, by hand, the rubber is cut away from the lines, leaving the signature in reverse relief. However, by using this method only one stamp can be produced.

Rubber type sold in a set, and assembled into a holder by the user, is another method of preparing a rubber stamp (Figure 8). These rubber type kits or sets are sold for office use as well as for toys. They are most likely to be involved in criminal matters because they are cheap, easily purchased, very portable, usable in privacy, adaptable for any set-up and can be re-used. When handled properly a very good impression can be obtained. The making of this type is similar to the rubber stamp except that a better grade of rubber is used and a definite height maintained, producing a type that is approximately level when mounted in a holder. The kits contain a font or definite number of characters which is determined by the number of "A" and "a" in a set. Many common words are prepared in one piece and this preparation is called "logotype".

With a rubber type set a printing press can be used when the number of impressions needed is too great to be done by hand. The press is designed primarily for registering many impressions in the same position. The type holder is fastened to an oscillating bed by means of a set of clamps. A backward motion inks the printing die from a pad on the back of the machine and the forward motion makes the impression.

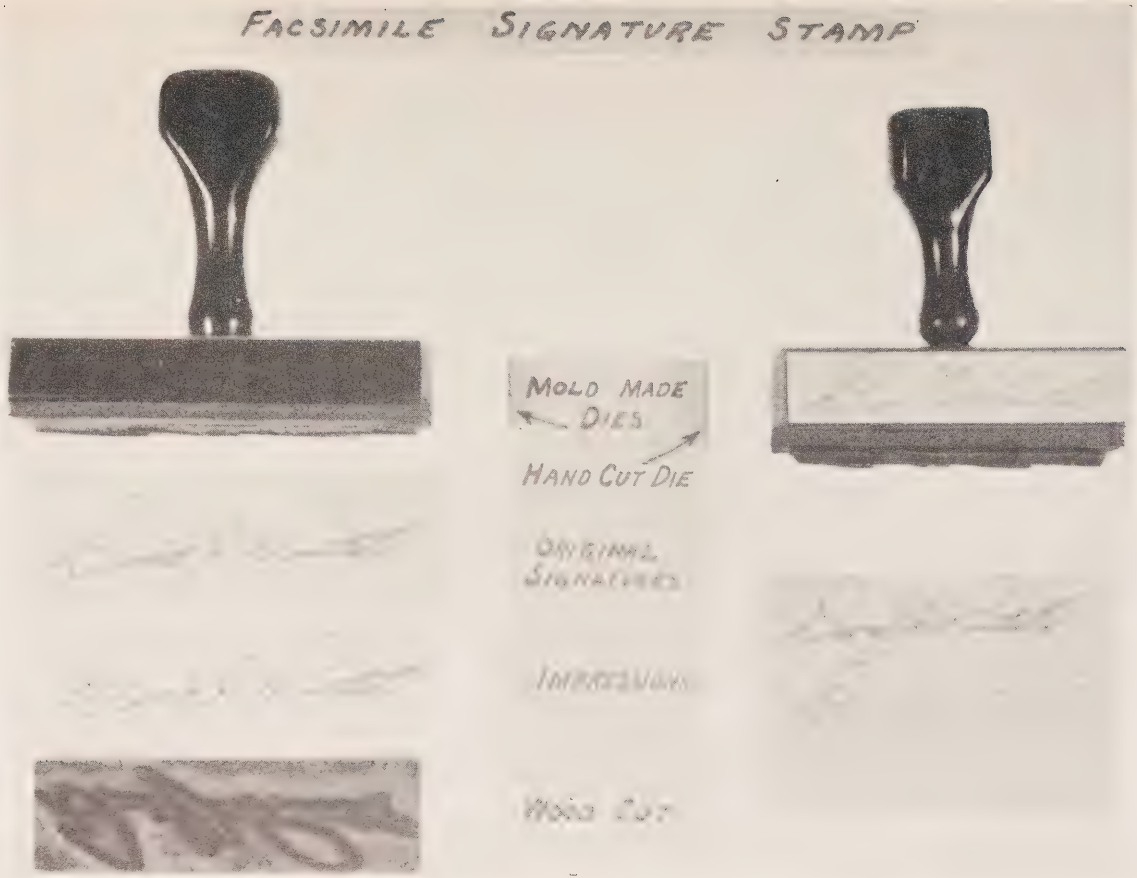

Figure 7
FACSIMILE SIGNATURE STAMPS

Figure 8
RUBBER TYPE SET

Figure 9

HAND PRINTING PRESS USING RUBBER TYPE

The method suggested for obtaining comparison impressions is similar to the method used in obtaining fingerprints with the exception of the inks involved. A glass plate, a rubber roller, and rubber stamp ink are employed. In using a stamp pad, it is recommended that the stamp be rubbed across the pad with light pressure. For best results, do not stamp or pound the pad. Different densities of inking and a variation in pressure allow for a series of impressions. A light impression gives, what seems to be, a third dimensional effect by showing the height of the letters. A coated paper produces an excellent impression, whereas a good, smooth bond or sulfite paper will render a sharp impression.

An investigator handling a rubber stamp case must submit the original document in question as well as the stamp. Under no circumstances should the stamp be cleaned or the type set-up altered or disassembled, for the alignment, spacing, and the arrangement of letters are paramount to an identification. It would be almost impossible to make an identification if the type were altered in any way.

Discussion of Lt. Purtell's Paper

Mr. WALTER: Can you distinguish between the rubber stamp made from the hexograph ink copy of your signature and the cut out boxwood signature, that is, can you distinguish the impressions of those two stamps one from the other.

Lt. PURTELL: I believe you can from the way it is cut. If you look close you can see the cutting along the edge of the lines.

Mr. WALTER: The boxwood would be sharper.

Mr. DOUD: I understand you said the same machine was used to prepare the plastic and rubber molds.

Lt. PURTELL: It is a press and a heater combined. It presses the steel type into the plastic and the plastic forms a mold on that machine; then take off the type and a slight pressure and heat will vulcanize and cure the rubber in the mold.

Sgt. DUXBURY: Lt. Purtell, in your Chicago Police stamp—if, say four stamps were made from that same impression, what difference would you expect in the identifying characteristics?

Lt. PURTELL: The first four, let us say, would have very little differences unless in the curing and vulcanizing of the rubber into the mold some foreign material can get into the mold between the making of the die. But this would not occur if it is perfect rubber and the die is kept clean.

Sgt. DUXBURY: If you were asked to identify a certain stamp as making an impression, could you say that that IS the stamp which made the impression?

Lt. PURTELL: You would have to go into both class characteristics and individual characteristics.

Sgt. DUXBURY: If there were two stamps in circulation you wouldn't be in a position to say that either stamp made it unless—

Lt. PURTELL: Unless there is some point of identification.

Mr. DOUD: How would you know whether that point of identification was due to wear or whether it was due to the defect in the type as originally made?

Lt. PURTELL: From wear you can, most of the time, tell where pieces might be broken off just like a typewriter identification. You get a piece broken off the letter—you know it didn't come from the manufacturer like that or it wasn't intended to. You maintain that each identification on the rubber stamp is similar to typewriting and handwriting—

Mr. DOUD: I think what Sgt. Duxbury had in mind was could you say that this impression was different from any other impression made from the same mold?

Sgt. DUXBURY: From the impression from any other stamp originating from the same mold.

Lt. PURTELL: That would be difficult to answer.

Mr. DOUD: You would really have to see the other stamps—but what I was getting at was the thing that would differentiate a stamp would be the wear and the damage that happens to them since the time that they were made.

Lt. PURTELL: That is right.

Sgt. HUBER: I notice, Lt. Purtell, that in the illustrations you have there you found defects in the type face used to produce the original mold in your Chicago Police stamp. These are a type of defect which, I would have assumed up to this point, would have been accidentals occurring due to wear and tear and I woudn't have expected to find them in the original material. That does happen?

Lt. PURTELL: Yes. You can see numerous defects—I only pointed out a few. Furthermore, when they are preparing the plastic molds there are changes occurring in the type all the time. You might make this set up today and a month from now I will go into the same drawer and set up "Chicago Police" again and there is a great possibility you won't get the same individual types. The same "C" might have been used in say, five or six other stamps in the meantime and changed from the time this particular mold was made until you make the next one.

Sgt. HUBER: Suppose I am looking at the impression only and I find a defect in a letter such as a piece out of your letter "C". How am I going to know from looking at the impression that that defect occurred as a result of usage and injury to the rubber, or was there as the result of production from a mold which had a defect in it? How am I going to distinguish between the origins of these two classes of defects.

Lt. PURTELL: In working just from the impression, not having a stamp?

Sgt. HUBER: Or even having the stamp, which is the second point I was going to bring up.

Lt. PURTELL: Let us take the facsimile signature stamp here. They broke off part of a letter in making it—you can see this sharp break in the "title"—and that is why I was recommending that you use the "title" as a starting point from which you will know how the type was when set.

Sgt. HUBER: But you should have the stamp itself to work with.

Lt. PURTELL: It would make it a lot easier.

Sgt. HUBER: I am thinking of a particular case we had in which they sent us a questioned impression plus samples taken from the stamps of a number of office stamps of a similar type and they asked us to identify the particular stamp which had produced the impression without submitting to us the stamp equipment itself. Can that be done?

Lt. PURTELL: I had one case—and I am answering from practical experience—with the United States Army in the handling of some funds and depositing of the money in the bank and they wanted to compare all

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the stamps in the bank—I think there were ten or twelve stamps—to see if the bank had placed the markings on these deposit slips or could the soldier have a stamp of his own. They sent in the impressions from all the stamps for comparison with these deposit slips and I was able to show which stamp made each impression, and they were all more or less the same copy—something like this—a line on the outside, then the word "Deposit" and then a bank name underneath it. There were twelve stamps and they must have all been made about the same time, yet you could tell one from the other.

Sgt. HUBER: Moving to the subject of the type sets—I notice these small types or individual types seem to have been originally joined. I take it they are molded in mass?

Lt. PURTELL: They are molded in a strip. A single mold will contain perhaps fifty such strips. Each strip consists of the required number of examples of each letter of the alphabet and other characters, numerals and commonly required phrases. A machine makes a partial cut to separate letters and characters from each other and the strips are placed in boxes by hand.

Sgt. HUBER: Then your final assembly will be from one particular row of the original mold. Could you get differentiation between different rows of that mold?

Lt. PURTELL: Yes. I spent two days out at this company watching them make the molds, make the dies, cutting them and noting if you can identify one row from the next row, one step from another step and I found that there are points which will assist, you can pick up maybe ten boxes and find a good portion of the letters differ all the way through. I might say here that Chicago is almost the centre of the manufacturing of rubber stamps in the States. I think that 95 per cent of the rubber stamps made in the United States are made in and around Chicago. I had the chance to study every type made.

Dr. MILLER: I want to bring out a little more of what Sgt. Huber has been referring to—mainly the identification of a specific item with the questioned material. We have had considerable experience not only with rubber stamp identifications but also with related types of identifications like printing—in lottery tickets or any types of cases where there is much duplication; in obscene literature where we are concerned with the interstate Transportation angle; going beyond our own section to the identification of die impressions in motor blocks and stolen automobiles. All of this experience has made us very cautious to avoid falling into a trap of identifying a certain rubber stamp as being a specific one. Our answer in nearly all of those cases, except in a few like Mr. Purtell points out—where you have very significant identifying peculiarities; where you could hardy avoid picking out a certain specimen from all others—we say that they are similar in size and composition and that they came from the same original master. By that we mean that from this master (indicating) you could make many, many duplications—they would all be the same size; they would have some defects which were inherited from the original but on the whole we feel that is about as far as we can go. I think that is the question you were raising a while ago—just when can you make an identification with that particular stamp. It is a real difficult situation. I do not say that you can't do it but you have to be extremely cautious. Take for instance that little map that you have over there. That can be used for making numerous impressions and every one of them will be the same size of an impression and have some of the same defects. I do not say it is going to have all of them but, when all is said and done, about all you can say is that it all originates from the same master. It is

equivalent to saying that this is all the same style as the Woodstock typewriter. I am not saying now that you can't make individual identifications but emphasizing that it is very difficult to do so.

Sgt. HUBER: I was particularly interested in the extension of that thinking to these so readily available commercial stamp kits which are becoming so prevalent now.

Lt. PURTELL: I believe that each case will stand on its own feet—or fall—according to the material you have available. You cannot set up any hard and fast rules. If you have a point of identification, point it out. If you believe, in your opinion, that stamp made that impression, you must have your reasons.

Mr. THOLL: In the Cleveland Police Department we had some interesting cases where other factors crept in, such as the factors of spacing. We had a union stamp case and from the fact that different things were spaced differently we were able to differentiate the stamps. Also in another case where two rubber stamps were otherwise identical the numerals were spaced at different intervals, and we were able to say that a certain fragmentary impression was identical with one of the stamps because the lateral spacing was identical.

Lt. PURTELL: There was one slide shown with a brass cut. That was a cut that was used to make over a hundred individual dies yet look at all the defects that have started to occur there. Would you identify it? I know I wouldn't because they are changing all the time.

Cst. FAY: We have a rubber stamp impression and we observe a number of defects. Is there any method of classifying these defects as accidental characteristics occurring in the making of the dies?

Lt. PURTELL: Class characteristics would be the size and the design of the type of your individual characters; also in class characteristics you might place certain defects produced when the stamp is made.

Cst. FAY: How do you know they were made at that time?

Lt. PURTELL: If you have the rubber stamp itself you can see the defects.

Cst. FAY: How do you know whether they are accidental or produced?

Lt. PURTELL: They would have to be produced during the manufacturing to show on the rubber die, itself.

Cst. FAY: And accidental features?

Lt. PURTELL: The letter "A" has a defect on it and if you look on the rubber die you find this defect showing, so it must have been on it when the stamp was made—a class characteristic. Then say part of a letter is broken off and the "title" shows a full impression, that would then be an individual characteristic.

S/Sgt. EVES: I have another point to always bear in mind and that is the possibility of fraudulent duplication of a stamp which could be carried out by a number of means such as counterfeiting accounts. I think such duplications could be quite exact and we should bear that point in mind.

Lt. PURTELL: Duplicating points have to go back to the original type.

S/Sgt. EVES: No, I am thinking of starting from just an impression of a rubber stamp itself.

Lt. PURTELL: You mean the production of a rubber stamp just from an impression on a piece of paper?

S/Sgt. EVES: Yes.

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Lt. PURTELL: How would you be able to obtain the measurements for the original style type and the measurements of the spacing?

Sgt. HUBER: Why couldn't it be done in the same fashion as they produce your signature?

Lt. PURTELL: On a wood cut?

Sgt. HUBER: I can conceive of a well reputed company which might carry a certain amount of weight if its stamp impression were found on a document. It might be the very type of stamp that a person might want to use to authenticate a forged document. How easy would it be for him to take a genuine document and reproduce his own stamp to authenticate other forged documents with it by the same process they have used to reproduce your signature?

Lt. PURTELL: I think it would fall in the same line as trying to reproduce a typewriter, only there would be much more work to the typewriter as there are many more characters.

Mr. THOLL: I have had several cases like that, and in the mechanical duplication there is always some little difference; in other words if you get a duplication—you might get a certain letter, certain connections or a certain way that letter is cut and you will note a combination of definite mechanical differences which are apparent upon magnification and there is no question but that one is not the same as the other. I think that can be positively ascertained.

Lt. PURTELL: I did ask the trade about duplicating and they said they seldom duplicate a stamp—most of the time they know who is ordering it. I know there is great co-operation amongst the manufacturers of rubber stamps in Chicago and they said they were suspicious of a duplicate stamp being made but that still does not eliminate the man with the know how and who buys the equipment.

S/Sgt. EVES: Of course, such impressions are not always subjected to expert examination; it is just casual inspection in some cases.

Lt. PURTELL: I can't see any reason, unless there is something really involved or there is a terrific amount of money involved to justify duplicating a stamp. I think it is more of an academic discussion. I have never run across one.

S/Sgt. EVES: On the contrary. I am not thinking of just the cheque cases.

Lt. PURTELL: No. I am thinking of any rubber stamp.

S/Sgt. EVES: Yes. In the case of identification documents—say in your plant securities etc., it can mean quite a fortune.

Lt. PURTELL: That doesn't fall into our line of security. I can see your problem—say someone wants to make a form of identification, gets into a plant, steals some material and locates the stamp—there can be reason for it.

Mr. WALTER: There have been cases where signatures have been duplicated in rubber stamps.

Lt. PURTELL: Oh yes. I would say a good rubber stamp would pass with any bank for a genuine signature. I have tried it on a couple of mine and they passed them.

Mr. DOUD: I think there have been cases where rubber stamp signatures have been duplicated by other rubber stamp signatures. I think that is one case where you will find the most common duplication of rubber stamps—where somebody is using a rubber stamp signature to sign cheques and other documents and somebody else duplicates it.

Lt. SMITH: The question is raised by Sgt. Huber and also Cst. Fay with reference to distinguishing between the characteristics which would appear on the rubber type in manufacture and post-manufacturing marks. Do you not think in the manufacturing process the defects will be of a flowing nature, of a smooth surface, whereas the characteristics and damages which occur to the type later on will either be sharp in size if it is a cutting operation or if in breaking off a portion of the type there will be a rough edge that could be observed on the impression of the stamp where you have a stamp?

Sgt. DUXBURY: Referring to your Chicago Police stamp, in the original die of metal would you expect to find that many defects in a new impression?

Lt. PURTELL: You mean a new piece of type?

Sgt. DUXBURY: Yes.

Lt. PURTELL: No. You shouldn't have any; this has been used through the years—how long I do not know—but I notice in that one file drawer different characters getting defects in them.

Cst. HODGINS: Would you have any way of knowing if an impression on a document were made by a stamp which had been made all in unison—that is as a unit, or made up of various individual letters?

Lt. PURTELL: A piece of logotype would have definite spacing, almost perfect spacing. You can distinguish between a piece of logotype and one that is set up by a series of letters.

Cst. HODGINS: If you find a difference in your spacing and can assure yourself that it IS a logotype, that you speak of, then you can be probably sure you are working from different impressions. That wouldn't necessarily be the case if they are made up of individual letters subject to motion.

If the individual letters are set up perfectly enough it would be very definite to say just which type it was.

Lt. PURTELL: If all the letters are set perfectly then you would look for individual characteristics.

Cst. HODGINS: The spacing is very significant in one case but not at all in the other.

Cst. BROWN: Since your rubber stamp impression depends upon the weight exerted you might get a wide line with the small defects filling in.

Lt. PURTELL: That depends on how much pressure is used.

Cst. BROWN: Therefore defects may be concealed and difficult to locate.

Lt. PURTELL: That is what makes our work interesting. No two cases are ever alike, each one stands on its own merit.

Qualified Opinions in Criminal Court

BY

Cst. J. H. HODGINS

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Whenever the presentation of expert testimony before a court of law is under discussion a question as to the value of a qualified expert opinion in such judicial proceedings not infrequently arises. The word "qualified", in this instance, refers not to the quality or correctness of an opinion but rather to those opinions which are something less than positive in nature.

Scientific problems brought to the forensic examiner are frequently not answerable in either totally positive or negative terms. Answers to many of these questions, as to problems the world over, lay neither in the black nor white but rather in one or more of the many shades of gray that lay between. It is regrettable that problems brought to the laboratory examiner cannot more often be answered with a direct "yes" or "no". It is, however, as a practical necessity that the probability or qualified opinion has found an important place in the written reports and verbal testimony of such examiners. The document examiner, perhaps more frequently than any other laboratory specialist, is forced to resort to some form of probability in the expression of his opinion.

That submitting agencies are often disappointed or annoyed upon receipt of an inconclusive report cannot be denied. The layman and the courts are frequently puzzled by the fact that a recognized expert dealing with a problem in his own specialized field is unable to give a positive answer to what may appear to be a very elementary problem. To deprive an investigator of whatever value he may derive from a qualified finding is, however, lessening the assistance he has reason to expect from the document examiner or other expert.

In some cases the expression of even the slightest probability may be of the utmost assistance to the submitting agency as an investigative lead. The document examiner occasionally engages in the investigation of a case in a rather direct manner in the elimination or probable elimination of some or all of the suspects or in the identification or probable identification of one or more of their number. The examiner's participation in the case may well end at this point, the necessary prosecution evidence being found either in an admission by the suspect named or by the introduction of other incriminating facts or witnesses. In other cases problems are brought to the document examiner only after painstaking field investigation which has resulted in strong suspicion resting upon a particular individual or a relatively small group of individuals. Material is brought to the laboratory under such circumstances in expectation that the results of the examination may be such that the examiner's evidence may greatly bolster the prosecution's case in an anticipated court proceeding. The report of the examiner, in such cases, does not generally constitute grounds for further investigation but is rather the culmination of previous investigation. Should the report of the examiner prove something less than satisfactory to the prosecution's case he will in all likelihood not be called upon to give testimony with respect to his findings. Should the other facts of the case be such that the prosecuting counsel feels

that a sufficiently strong case may be established without evidence by the examiner and should the preliminary report of the examiner indicate only probable identification then he will in most cases not be called. It appears to be the feeling of some investigators and courts that the expression of an opinion which is something less than positive tends to weaken rather than strengthen an otherwise strong case. Thorough consideration of the facts cannot justify such an attitude.

In the process of establishing a case against an accused person a very considerable amount of evidence is frequently amassed. The greater part of this evidence, in many cases, is not direct evidence which may be said to directly connect the accused with the offence but rather a number of facts which, in combination, tend to support the theory that the accused well may have committed the offence. When the case for the prosecution is based on a large mass of circumstantial evidence, then, it is undoubtedly true that the strength of the case is completely dependent upon a consideration of the number of "circumstantial" facts which are presented and on the varying degrees of directness with which such facts implicate the accused in the offence. The weighing of such evidence must, of necessity, largely resolve itself into a numerical consideration of the facts whether the process be conscious or otherwise. By this it is meant that many of the decisions which we make daily are based upon statistical reasoning even though we ourselves, while making such decisions, are considering the arithmetical ratifications without being aware that we are doing so.

If, as you are walking down the street, you should have occasion to observe a man whom you have previously met you will feel that you have seen this man before because his facial features appear familiar. You may be convinced you have seen the man before if you observe both his facial features and his stature. Should you now hear the man speak you may become relatively certain you have previously met. Your relative certainty may give way to a positive certainty if you should now observe the man to be bearing an unusual tattoo upon his arm. In becoming more certain of this individual's identity you are being influenced by the physical features retained in your memory and those of the man presently observed. Unaware that you are doing so you become more certain of the identity of the observed person as the common features observed become more numerous or the few common features observed are of more unusual significance. The point is finally reached when you will be prepared to swear to the identity of the individual. The ultimate certainty of your final identification is an unconscious summation of the number and significance of comparable features.

The weighing of any circumstantial evidence by a criminal court may similarly be said to consist of an evaluation of the number and significance of facts which, in a more or less indirect way, implicate the accused in the offence. Why then are the courts frequently denied the further assistance of the expert's opinion which is, once again, nothing more than a trained consideration of the number and significance of the implicating facts or features?

For the purposes of a clearer understanding I feel that it is desirable that we should examine a case based on certain assumed facts or hypothetical postulates. Let us therefore, with this purpose in mind, acquaint ourselves with the assumed facts of the following case. It may be pointed out at this time that while the facts of the case itself are purely hypothetical the fundamental problem encountered is very real and threatens to become more ominous as the presentation of qualified opinions in criminal court becomes more frequent.

On March 12, 1955, a phone call was received by the municipal police at St. George, N.B., from the manager of the local bank that his bank had been held up some minutes earlier by a lone gunman. Investigators proceeded to the bank and obtained particulars of the crime as well as a description of the gunman from the manager and the teller, the only bank staff present at the time of the crime. It was learned that a man, unknown to both bank employees, had entered the bank and had gone straight to a writing table, withdrawn a blank cheque form from the pile available and had begun to write on the selected form. No particular attention was paid to this individual as it was felt that he was merely preparing a cheque for negotiation. After a short interval the teller looked up from his cage to see the man, his face now partially covered with a white handkerchief, approaching with a pistol in his hand. The masked stranger shoved a brown paper bag and the cheque form toward the teller. On the back of the cheque form was the following hand-written message, "This is a holdup put all the money in the bag". The terrified teller glanced at the menacing stranger and quickly complied with the written order. The gunman scooped up the bag of money and hurried from the bank removing the handkerchief from his face as he reached the door. He ran to an automobile parked nearby and roared away from the area.

The manager and teller were only able to give a partial description of the bandit's facial features but described his height as being approximately 5′ 10″ and his build as being rather heavy. Both witnesses spoke of the gunman's red curly hair and also the fact that he was wearing a red jacket with blue buttons. A bystander was located who had observed the gunman flee from the bank to the nearby automobile. This witness was unable to provide any further description of the gunman but stated that the car used in the escape was a blue Chevrolet of 1953 or 1954 vintage, also, that there was a crack running diagonally across the rear window. The investigators took possession of the holdup note and the white handkerchief which had been dropped on the steps of the bank. On one corner of the handkerchief was the printed letter "R", apparently intended as an identification mark.

The investigators soon centred their suspicion upon an unemployed mechanic by the name of Rogers who resided in the village of Burton some fifty miles distant. It was learned that Rogers, whose description fitted that provided by the bank employees, owned a blue 1954 Chevrolet sedan which proved to have a crack running diagonally across the rear window. The suspect's room was searched, however, the only incriminating article found was a red jacket with blue buttons. Both the automobile and the jacket were taken into possession of the investigators. Rogers denied any knowledge of the offence and readily agreed to provide the investigators with samples of his handwriting. These samples, together with the holdup note, were submitted to an eminent document examiner who reported it was his opinion there was a strong probability that the writing on the note and the specimen writings were written by one and the same person. A charge of robbery with violence was preferred against Rogers who chose to be tried by the local magistrate.

The first witness called was the bank manager who testified concerning the details of the robbery and concluded by stating positively that the accused was the man responsible. When cross-examined as to his identification of the accused he stated that such was based on a study of the height, build, approximate age, colour of hair and facial features of the accused.

The teller, as the next witness, stated he was quite satisfied the accused was the gunman but refused to state that there was no possibility of error in his identification. He stated that he had not had sufficient opportunity to

observe the gunman's facial features but the build, height, and colour of his hair caused him to be relatively certain of the man's identity. Both witnesses spoke of the gunman wearing a red jacket with blue buttons similar to a jacket produced in court. The next witness to testify was the bystander who could not personally identify the man he had observed running from the bank, however, when shown the automobile owned by the accused he stated that he believed it was the vehicle the holdup man had used to flee from the scene. On cross-examination this witness admitted the only basis for such a belief was the colour of the automobile, its make and the crack running across the rear window in a diagonal manner.

The investigator next told of seizing the automobile to which the accused had claimed ownership. He also produced a red jacket which he stated he had seized from the room occupied by Rogers. The white handkerchief found on the bank steps was entered as a court exhibit. The investigator then spoke of obtaining samples of handwriting from the accused and of submitting these samples together with the holdup note to the document examiner who testified that he had made a comparison of the writings and stated, as his opinion, there was a strong probability the questioned note and the specimen writings were written by the same person.

No evidence was given on behalf of the accused, Rogers himself choosing not to take the stand. The magistrate in summing up stated that he was satisfied of the guilt of the accused on the basis of other evidence presented but since the expert had been unable to positively identify the questioned note as having been written by the accused that the accused was entitled to any existing doubt and therefore ordered acquittal.

Some consideration of this decision is perhaps in order at this time. There can be little doubt of the effect of two witnesses speaking of a red jacket with blue buttons and of such a jacket being produced and the ownership not denied by the accused. How much more significant would this evidence have been if the man had been wearing a gold coloured jacket and such a jacket had been found? How much less significant would evidence concerning the gunman's hair have been had his hair been brown? How much less significant would have been the bystander's identification of the escape car had not the rear window been cracked, or how much more significant if cracked in a very particular manner? How much more significant would have been the finding at the scene of a handkerchief with the initial "Z" had the accused's name been Zenon? These facts were, without a doubt, considered in view of their number and of their significance. These numerous facts, in themselves, satisfied the magistrate as to the guilt of the accused. Why then should the court deprive itself, or choose to interpret wrongly, the evidence of the expert who in arriving at his own opinion had similarly considered the number and significance of the characteristics or features of the writings compared.

There appears to be a tendency to accumulate on the one hand the final decision reached from a weighing of the circumstantial evidence of the case and on the other hand the final opinion of the expert. It occasionally appears that a distinct effort is made to separate the general evidence from the expert opinion rendered, regarding the two as distinctly different aspects of the case. When these two classes of evidence have been established the judicial tendency appears to be a weighing of one against the other in an effort to determine if they are opposed in even the minutest detail. It seems to be felt that expert evidence cannot be regarded as strengthening the case unless it, standing alone, points to the guilt of the accused in an irrevocable manner.

I cannot believe that this divorcing of the expert testimony from the other testimony in the case is correct procedure. A single circumstantial fact when

considered in its individual light does not weigh strongly on one or the other side of a case unless such single fact is of unusual significance in that it points in a direct or forceful manner toward the guilt or innocence of the party. A circumstantial case is built not upon one but rather a series of these facts. The decision necessarily rests upon a weighing of the number and significance of such facts. Each fact presented does not, or is not expected to, confirm in every respect each such other fact as may have been, or may subsequently be, tendered in evidence. Any one fact so tendered does not render a presumption of guilt but rather the cumulative total of such independent facts leads the court to the conclusion that a presumption of anything other than guilt is not reasonable. If the cumulative total of such evidence points strongly toward the guilt of the accused but the number or significance of the circumstantial facts still leaves any reasonable doubt then it is essential that the accused be afforded the full benefit of any such doubt.

The magistrate in our stated case was undoubtedly influenced by the accused's possession of a red jacket or by any of the other single independent facts but he did not insist that such facts were not relevant or forceful because they failed to point directly and completely to the guilt of the accused.

A witness, in making a personal identification of an accused person, states that he feels very certainly that the person observed at the scene of the crime and the person on trial are one and the same person and such witness may admit the possibility of error without the total destruction of his evidence. His testimony still stands if he satisfies the court that those features which he has observed are common to the person accused. He says that the person observed and the accused are one and the same on the basis of common physical features observed but he may not feel justified in expressing his identification as an absolute certainty because his limited observation has prevented him from studying and evaluating these various features. The witness who makes a personal identification is wholly dependent upon his memory which, as all human functions, is subject to frailty and he may, either unconsciously or deliberately, fill the necessary gaps from his imagination. If some features are found comparable then the immediate suggestion to the mind of the witness is that the other features must of necessity also be comparable. It is obvious that such a mental process can lead to a positive conclusion based on very meagre foundations. The features, being borne in the mind of the witness are not tangible physical components available to those who may wish to verify the identification made by the witness. The beliefs of such witnesses cannot possibly be subject to the slightest standardization as the degree of qualification of the identification is, for the most part, subject to the whims, memory and integrity of the observer. Is a greater verity of conclusion not therefore to be expected from a scientific study of the handwriting features which, being permanently recorded, are available for unlimited evaluation and comparison although the opinion setting forth such conclusion may be of a qualified nature? Is it reasonable to assume that because the limited nature of the writings reduces the number of comparable characteristics to a point slightly below that which the competent examiner feels necessary to support a positive conclusion that the probability expressed on the basis of the limited characteristics which are actually found to exist should not be accorded the utmost consideration?

If blood grouping evidence placing the culprit among a relatively large group of the population is of value to the court how then can the qualified opinion of the document examiner be considered of less value since, in effect, such opinions place the authorship among an extremely small group of the population? If the circumstantial evidence presented shows a preponderance

of facts consistent with the guilt of the accused by what means can it possibly be said that preponderance is lessened rather than supported by the probabilities introduced in the form of qualified opinions unless such opinion opposes the evidence in general. Failure of the expert opinion to positively and completely support the other evidence in the case cannot, it is felt, constitute opposition to such other evidence. The qualified opinion must be considered in its positive rather than negative aspect but such is apparently the present method of some courts. Not until a clearer understanding of the necessity of a union of the probabilities inferred by qualified opinions together with the probabilities arising from the other facts of the case is common to courts can we expect these opinions to be accorded their true evidential value. Such true value can only become an accepted part of these opinions when Courts free themselves of their present attitudes and consider, as they must, the inherent probabilities such opinions convey when considered not in their individual light but when considered in combination with the probabilities established by the other facts of the case.

It may be said that I have gone to great lengths to bring out an imaginary problem; some may say that the problem as well as the case presented is hypothetical. I do not suggest that the problem presented is typical of all or even the majority of our Courts nor do I suggest that the problem is as acute as my presentation might indicate. I do, however, feel that this attitude does exist, to some degree at least, in some of our courts and certainly with some of the investigators with which we deal or might well have occasion to deal. If you will agree that the problem does exist to an appreciable degree then what measures, if any, would you suggest to overcome such a problem? Feeling, as I do that expert opinions, if properly considered, may be of considerable value even if these opinions suggest only slight probabilities then what steps should be taken to ensure that such opinions find their rightful place in the decisions of our Courts? Certainly we cannot hope to find a solution in the continued avoidance of Court appearances in those cases resulting in something less than positive opinions. It is therefore this question which I bring to you today in an effort to determine if you will agree that the problem I have suggested actually exists or what your suggestions regarding a practical solution may be.

Discussion of Constable Hodgin's Paper

Lt. SMITH: You have stated the problem and have cited the dangers. My own impression is we should try to avoid appearances in court when we have qualified opinions.

Cst. HODGINS: I personally cannot feel that the avoidance of appearing in cases can be prevented just because we cannot give a positive opinion.

Sgt. HUBER: I think your point early in your paper was to the effect that all of this other evidence which we have called circumstantial has a limited probability.

Cst. HODGINS: Our evidence is nothing more than a continuance of theirs.

Sgt. HUBER: I suppose it would at least serve to provide the court with that information that there is nothing in the handwriting to indicate that this individual did not write it.

Cst. HODGINS: Yes, I should think it would but if you could go a little bit on the other side of the fence—

Mr. THOLL: We find there are many cases to examine that as long as you can express a possible conclusion—

Cst. HODGINS: You are admitting the possibility of that in the expression of your opinion.

Mr. THOLL: The very uncertainty renders it useless.

Sgt. HUBER: Not any more uncertain than some of the other evidence.

Mr. THOLL: It depends on the case.

Sgt. HUBER: It is fine from our case stated here—

Mr. THOLL: Yes; it seems to me in the case related it is very excellent.

Sgt. HUBER: The point I was trying to make was that, on the basis of all the other evidence, the magistrate was satisfied.

Mr. PARK: Usually in a case of that kind, do you not have a handwriting expert?

Cst. HODGINS: Yes.

Cst. BROWN: In your hypothetical case pertaining to evidence—called factual evidence—there is no probability there.

Cst. HODGINS: It is a probability in the same manner as the car was identified.

Mr. WALTER: It is a fact that we all know that personal identification is sometimes mistaken and a man goes to gaol.

Cst. HODGINS: I think so; but not in a serious case—let us say a murder case.

Dr. MILLER: We have been discussing this matter of giving qualified opinions. Many times we have looked at it from a broad scientific standpoint of what kind of scientific evidence should be given. In our Laboratories, as you pointed out, we now testify that two samples of blood lie in the same grouping—Group "O"—there can be sixty million people who could have furnished that Group "O".

In connection with the analysis of soil, our experts could say that soil could have come from the same sources. In the examination of metals, paints—they could say the metal combination is the same and paint the same, and over and over again. In our Laboratory we testify not as to probabilities but as to facts; therefore, we have to differentiate between probabilities and facts.

We have advanced a little in our document work—for example, we say two envelopes, two pieces of paper are the same size, the same weight and the same colour. Those are observations of facts; they are not observations of probability and in handwriting when you come right down to it, we can and occasionally do testify as to certain things.

I think we are making great headway. Thirty years ago we went around and tried to convince everybody that fingerprint identification was sound science. It took a lot of missionary work; it took a lot of training and instruction to get the courts to understand and to accept fingerprint identification as a science. You older fellows here know that we had a lot of trouble in our earlier days to get the courts to accept handwriting. We are winning all along but we are in the race and I think as long as we feel that we are giving facts and not probabilities we are a little closer to what we are trying to reach. There is no objection on the part of anybody to the statement of a fact. It is just like the man who finds the paint at the scene of the crime and can say that that is the type of paint that came from a Chevrolet automobile. A little dust would lead to circumstantial evidence to the presence of that type of an automobile at the scene of the crime when he is not definitely saying that the Chevrolet automobile is responsible for killing that person at the scene

of the accident. My point is as long as we adhere to testifying to facts instead of to probabilities I think we are going in, what I believe to be, the right direction and I can see that in certain instances, under certain conditions, we can say that the peculiarities are similar in those respects. Today we can't identify inks but we can still say that they are analine type inks and that they have the same type composition. I think you have to look at it from the overall standpoint of scientific evidence not examination of documents.

Mr. Doud: As a matter of fact there are similarities in handwriting. There may be only three or four but they are not enough; so those three similarities —or four—are facts but they don't constitute weighty enough facts to warrant a positive conclusion. I think that is the crux of the matter.

Mr. Walter: Too much prejudice in the judicial mind in regard to handwriting testimony.

Sgt. Duxbury: Of course, this—as you call it prejudice—doesn't apply to all courts either; we have courts out West who want that type of evidence—qualified evidence—and they had remarked, in fact, that that is the evidence which they want. If you can't say positively, well, don't say positively; but as you suggested before, Mr. Walter, if that evidence is there, the court wants that evidence so that they can add it to the accumulation of other evidence to make the case.

Lt. Smith: Sgt. Huber, I think, struck a note when he mentioned in referring to evidence of that type that it was probably more valuable to cite it in its negative form, that is, where you are compelled to do that. I still resist this business of being obliged to appear but you all know that being subpoenaed we will be asked to testify whether we want to or not in many cases. Where you have to express an opinion like that or to give such testimony it might be best to stress that there is an absence of differences rather than that there are a few similarities, where there might reasonably be an error involved.

D/Sgt. Schroeder: The expert should not have been there; he went there with a doubt in his mind; he gave a qualified opinion and upon cross examination the defence may ask the expert if there is any doubt in your mind concerning these observations.

Lt. Smith: I would just like to make this one other point and that is there is considerable danger in any examiner who allows himself to get into the habit of being called in on this type of case and of testifying on a qualified opinion, because eventually just as sure as death and taxes he is going to run into a case where his probabilities are going to be so slim he is going to find that the writer is somebody else and he will be discredited in that particular court. I think that is where the greatest danger lies in being too free with this type of testimony because eventually you are going to lower the bars more and more and under certain circumstances you may drop them a little too far.

Cst. Hodgins: I cannot really agree with you on that. If, as Sgt. Duxbury says, in the West the courts are favourably inclined and as a matter of fact desire you to give that sort of evidence—

Lt. Smith: They must comply if there is a request for it.

Cst. Hodgins: Actually, you are admitting the possibility of error; you are saying "I believe that the man wrote it, I may be wrong".

Supt. Leggett: The question rises in my mind—what would the attitude of your legal officer be toward the acceptance of any opinion from an examiner of questioned documents. I know our experience in the State of Ohio is that the prosecutor will not accept an opinion from an examiner unless it is positive; unless he feels that he can take that report into court and present it

in a logical manner and have expert testimony that will be able to put the points at issue over to the Jury. Therefore, there wouldn't be any question of the court deciding whether that opinion is to be accepted or ruled out. I believe that the prosecutor is the representative of the community who is trying the party and if you tell him that you do not have a positive opinion, that it is qualified, he should refuse to take it into court and run the chance of a Defence Attorney subpoenaing you on the reverse side and upsetting the applecart. That is what I find with our prosecutors in Ohio—they won't accept it unless you are positive. If you are going to be an examiner, you have to know whether you have a case or not and if with the material at hand you feel you do not have a case, advise them and that ends it.

Cst. HODGINS: I think it is pretty pathetic to go nine miles along a ten mile road, to have to stop there and then go back home, so to speak. I think you have a lot to offer the court and it is a disgrace if they cannot view it in its proper perspective.

Cst. WARREN: I believe that once an examiner makes an examination the court should have the benefit of his opinion—whether it is for the prosecution or for the defence; we are supposed to be unbiased and it is up to the court to decide which way it will go; we should give our testimony.

Cst. HODGINS: Yes. Undoubtedly, if your evidence doesn't agree with the other facts of the case then certainly you should give it. Of course, that is just another point and that is a matter of ethics; but I certainly do feel that way.

S/Sgt. EVES: I think Dr. Miller has offered a suggestion for the treatment of such cases. In the case of a non positive conclusion, rather than stress the possibility the witness states the factual evidence, the number of similarities that exist, and it is up to the court after having been presented with those facts to arrive at its own conclusion.

Cst. HODGINS: But the court is invariably going to call you to task anyway; they are going to say you found these differences, you found these similarities, what are you saying? They won't take it from there. There have been many instances when they will throw it right back to you and say "well, finish up your job".

S/Sgt. EVES: Not necessarily—you could say that IS my job; that is as far as I can go now.

Mr. MARSHALL: What if the lawyer says: "yes" or "no?"

S/Sgt. EVES: I have presented the facts that I have observed and as far as arriving at a positive conclusion I have not been able to do so.

Sgt. HUBER: You, as an expert in the field, have not been able to arrive at an opinion on the matter, that is, a definite one, one way or the other; but is it right and fitting that we should turn the facts that we have found over to the Jury and let them who are unqualified form an opinion which may be in error due to their inexperience in studying the matter and appreciating the significance of what they are looking at? Do you think that is any improvement on the situation?

S/Sgt. EVES: Yes, I think so. You are presenting a number of facts which are to be considered.

Sgt. HUBER: Yes, but these facts all necessitate interpretation and appreciation and that is where the document examiner takes his place in advising the court on these matters. If we didn't require interpretation or appreciation then why not just turn all handwriting over to the Jury.

Sgt. DUXBURY: I think we have lost the point that the examiner is giving his evidence as opinions with his reasons for having those opinions; his reasons

have a greater bearing on the weight of the evidence to the court than the fact that his opinion is qualified. If he has good reasons for arriving at that probability I think the court will be able to place considerable weight on that evidence.

Cst. HODGINS: There is another very interesting point, that is, just how much can one weigh against the other when you have a probability on two sides—an improbability that one man wrote it and a probability that another man wrote it. How much does one affect the other?

Mr. WALTER: Isn't it a fact that if the evidence is meagre, on the handwriting alone we would not go into court; that if it is supporting other evidence, then that changes the aspect of the matter. May I read just a brief paragraph to you what a learned judge said over ninety years ago and it seems to me that he had better reasoning power than some of our present day judges. The Lord Chief Justice of England said: "There is nothing in which men differ more than in handwriting. The evidence of professional witnesses is very valuable assistance in enquiries of this kind. The advantage is that habits of handwriting as shown in minute points which are taken from observation, that are quite observable when pointed out, are detected and disclosed by science, skill and experience, and it is so in the comparison of handwriting by the assistance of experts. TAKE THIS INTO CONSIDERATION WITH ALL THE OTHER CIRCUMSTANCES IN THE CASE . . . ". That was Lord Chief Justice Coldwell in 1870. I would say he had very advanced state of reasoning.

Lt. SMITH: There is one other point—incidentally, I believe that all the comments made here have merits, divergent as they may be, and the difference of viewpoints regardless. We cannot thrust ourselves as individuals in a court as witnesses; we are outside the groups that are normally called as witnesses. No other person can go on a stand and express an opinion, it is inadmissible. We have to meet the rule of competency in these things. What is the rule of competency we must meet? We must first of all qualify that we have special training and the judge rules on our acceptability. That makes us competent to testify, but what are we competent to testify to? We are competent ONLY to testify to an opinion. If you have no opinion, you have no business on the witness stand; that is one viewpoint only and it seems that this is approaching it from a legal standpoint. I am not citing this as my own opinion but as an opinion expressed and as cited in these Ohio cases that Supt. Leggett has mentioned. I think possibly these are points that deserve a little more attention.

Typist Identification

BY

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Among the most difficult problems encountered by document examiners in the analyses and comparisons of typewritings is that of identifying a questioned document as having been typed by a particular individual, or of establishing that a number of documents have been typed by the same person.

Generally speaking, and certainly insofar as the literature on the subject is concerned, it is a task forming part of the examinations respecting anonymous and threatening letters. This however, is not its only application, for it can be readily appreciated that to associate an individual with the typing of a particular document is thereby to establish him or her as having a knowledge of its contents, and typewritten communications containing incriminating statements oft-times make their appearance in the promotion of conspiracies, the operation of combines, or simply in the personal correspondence of the persons involved in the commission of any offence. Such communications, as in anonymous letters, may or may not be signed, and if signed may or may not adopt a fictitious or nick name. More often than not some attempt to partially conceal the sender's identity is made.

A further instance in which the identity of a typist may be important arises in cases where a "plant" is arranged in the form of incriminating correspondence bearing some fabricated identification with an innocent party, perhaps for the purpose of misleading investigators, perhaps in a deliberate effort to do an injustice to a particular person as might be motivated by hatred or jealousy.

Literature

While the identification of a typist is a possibility generally admitted by document examiners, little material of a technical nature covering a suitable procedure has found its way into print. Where comment can be found, confidence in the results of such examination varies from the cautious, skeptical remarks of Brewster of 1931 to the distinct assertions of Baker of 1955:

Brewster says, at pp. 289

> "Ordinarily it is *seldom* that the work of any particular operator can be positively identified, but of course much will depend upon circumstances.
>
> . . . in the work of two good (i.e. trained) operators, it is *improbable* that the difference(s) would be sufficient in combination or number for a definite opinion to be arrived at.
>
> Where, however, there are any abnormalities, . . . these might all be very significant as *indicating* the same author."

Even Osborn sounds somewhat dubious in "Questioned Document Problems" at pp. 151:

". . . (some of) the courts . . . have decided that typewriting sometimes shows qualities which at least *tend* to identify the operator."

Baker's remarks are distinctly more affirmative:

"When sufficient typewriting is available for comparison the peculiarities in the manner of typing will frequently identify the operator."

Only Osborn's "Questioned Documents" gives the problem extensive consideration. There, as has been suggested, the treatment of typist identification is incidental to the examination of anonymous letters. At p. 601 he says:

"Anonymous letters are sometimes written on the typewriter, and it may be important to determine, if possible, not only what machine they were written upon but by what operator, and it is necessary to consider what characteristics in typewriting identify, or tend to identify, the operator."

Osborn goes on to suggest:

"The points for consideration are, first, as with handwritten letters: (1) spelling (2) punctuation (3) use of capitals (4) division of words (5) choice of words (6) construction of sentences (7) observance or non-observance of grammatical rules (8) subject matter in general."

Osborn then adds fourteen further points concerning the typewriting itself, including (1) indentions (2) arrangements (3) unusual character usage (4) errors and methods of correction (5) characteristic weight of impressions (6) margins (7) line lengths (8) characteristic numeral arrangements.

It must be pointed out that consideration to those of Osborn's first eight points concerning, grammar and sentence structure can *only* be given when dealing with the restricted problem of anonymous letters, and cannot be applied to the general problem of typist identification without first establishing that the composer of the letter and the typist are in fact one and the same person—a matter which can generally be taken for granted in the production of anonymous letters. In any other instance the choice of words, construction of sentences and observance or non observance of grammatical rules are products of the composer of the document who is not necessarily the operator of the typewriter.

Development

The principles to be followed in the process of identifying a typist are basically those of any other analysis conducted in document examinations. It is necessary to determine what are the variables in the production of a document and to group such variables accordingly as they may be peculiar to a group of persons or to a single person. The former constitute "class" characterisics which each member of the group may be expected to possess in common. The latter are "individual" characteristics by a combination of which one member within the class may be distinguished from all others. The difficulties in this examination are augmented by the fact that in both typing and the written language the quantity of individualizing features are somewhat more limited than in other human performances. Proportion of "class" to "individual" characteristics is greatly increased. In both typing and composition there is a definite requirement to follow prescribed patterns, and consequently they are performances in which many individuals will behave alike or at least strive to do so. The typist is influenced by the rules of good business practice, and the speaker or writer is to an extent, governed by the principles

of good grammar. Only when violations of the rules are committed, or personal idiosyncrasies are introduced in number and some variety can there be a combination of features of sufficient significance to identify or eliminate a particular individual.

In attacking the problem of typist identification in its general application without limiting it to investigations of anonymous letters alone it must be recognized that a distinct division exists in the evidence which may be considered. There are first, those features which are characteristic of the operator of the typewriter (i.e. the typist), second, those features which are characteristic of the author or composer of the text, and, third those features which indicate that the typist and the composer are one and the same person. These distinctions are extremely important for it is only in cases where there is definite evidence of the typist being the composer that evidence tending to identify a common composer, as may be derived from an analysis of the language and text, can be combined with or allowed to substantiate evidence tending to identify a common typist, as derived from an analysis of the typewriting itself. On the other hand, where definite evidence is present revealing the typist as also composer, then there seems no reason why any evidence of value produced from a complete analysis of subject matter, language and style contained in the text, such as might be given to handwritten material cannot be used to supplement evidence of identity or otherwise present in the typewriting alone.

Our discussion of typist identification at this time is illustrated by a recent case submitted to this laboratory, in which it was desired to know whether twelve typewritten letters were the product of one typist. All letters bore no signatures and in most instances identified the sender only by fictitious names.

Analysis of the Language—the Composer's Characteristics

Ben Johnson's well known remarks: "Language most showeth the man; speak that I may see thee" were certainly not made with any thought of document examination in mind, yet the truth of his statement cannot be denied, regardless of its application to the spoken or the written word. Individual differences in verbal behaviour go far to put us in our social niche. In addition to the information we intend to convey, our speech or our written language inadvertently helps the listener or reader to guess our nationality, sex, age, region of the country, social background, and education.

Experiments have been conducted by psychologists to determine whether, and with what accuracy, compositions of the same author can be identified with each other. While the accuracy was in fact remarkable, the question naturally arises: what clues made them say one composition was written by the same person who had written another? Unfortunately, the investigators themselves are unable to answer. They succeeded intuitively, which means they were unable to formulate in words all the factors that influenced their decisions.

Various attempts have been made to analyze compositions according to "Statistical Indicators". This process includes consideration of such factors as:

(*a*) Vocabulary size
(*b*) Verbal diversification
(*c*) Sentence length
(*d*) Styles in punctuation
(*e*) Verb-adjective ratios
(*f*) Readability

Osborn gives the analysis of language a detailed accounting in his discussions of anonymous letters, both in "Questioned Documents" and "Problems of Proof" listing some 168 factors. Some of Osborn's distinctions are somewhat difficult to make, however, and present further problems to the examiner in themselves. For the purposes of the Document Examiner the features to be considered may be classified under the following major headings:

(*a*) Subject matter generally—text, technical terms, tone, style.
(*b*) Rhetoric—or literary quality.
(*c*) Composition—adherence to rules of grammar.
(*d*) Word choice—repetition and use of favourite words, and expressions.
(*e*) Other errors and idiosyncrasies.

Subject Matter

The comparison of typewritten documents in the general case for the purpose of establishing that they are the product of a common composer requires that in the consideration of such features as subject matter, use of technical terms, tone, and style allowance must be made for differences arising from the different purposes for which the documents may have been written. Furthermore the opportunity to consider subject matter in the comparison of two or more documents will be the exception rather than the rule. Nevertheless occasions do arise when a series of letters or documents are involved. The argument in support of the use of an analysis of the text of the subject matter lies in the assumption, of course, that all subject matter, other than that which can be considered public knowledge, is the knowledge of a limited number of individuals. The nature of the subject matter itself can give a further indication of the extent to which such knowledge must be limited. The more "private" or "personal" the subject matter the fewer the number of persons in possession of such knowledge, hence the more significant is any similarity therein.

In our example a study of the subject matter discloses:

(*a*) Reference to parcels of real estate—(10)
(*b*) Reference to failure to reply—(8)
(*c*) Identification of individuals by initial—(12)
(*d*) Identification of real estate by house number only—(9)
(*e*) Change of tone with succeeding letters (growing anxiety)—(7)

Rhetoric

Rhetoric is a matter which undoubtedly will remain in part at least an intuitive consideration to most document examiners. There is no doubt that gross distinction in a composition can be made, and reliably so, by any intelligent reader, and in so doing (*a*) vocabulary size (*b*)verbal diversification (*c*) sentence length, and (*d*) readability will be primary factors.

It may be that differences in vocabulary size can be recognized by a simple arithmetical tabulation of the words of the text.

Composition

In the analysis of the language appearing in typewritten documents one cannot, of course, consider errors without first determining which errors are attributable to the typist and which may be assigned to the author or composer.

Errors or oddities in the grammatical composition of the material may, of course, be individualizing features of the greatest probative value, but many such errors are common.

A study of the grammar in the documents of our exemplar case discloses a tendency to omit the subject of a verb in 10 of the documents. Examples:

"Was to P.O. but no mail"
"Shall go there tonight"
"Am rather curious as to what is happening"

A moment's consideration convinces us that while these are grammatical errors they are of common variety.

Word Choice

The repetition of words or expressions will in general be characteristic of the individual with the lesser vocabularly. Our exemplar case produced an apparent affinity for:

(*a*) the infinitive "do" in such expressions as "do this", "do not do that", and "I do hope".
(*b*) the verb form "shall" as in "you shall have to do it by faster method", and "I shall have to change my plans", and "I shall continue to gather information".
(*c*) the expressions
"you might" (4 docs)
"I should like" (4 docs)
"I trust" (5 docs)

I should not contend that an attempt should be made at fine distinctions in the analysis of language. The study of the subject matter, however, may contribute considerably. The more the text restricts by nature the population of authors to be considered, the greater the value of even gross distinctions for the purpose of identification.

Analysis of Relationship—of Typist and Composer

The second phase of the type of problem under discussion concerns those features indicative of an author of a typewritten document being also the typist. Even without precedent to follow, an intelligent study of the matter will provide a number of factors whose value as evidence of the desired nature will be self evident. These will include:

1. Nature of some errors and manner of correcting.
2. Lack of formal arrangement.
3. Lack of separation into paragraphs.
4. Non-adherence to proper grammatical or formal sentence structure.
5. Concurrence of typing with thinking.
6. Termination of letter with bottom of page.
7. Choice and treament of paper.
8. Unusual charatcer use.

Analysis of the Typewriting—the Typist's Characteristics

Two general methods of operating a typewriter keyboard seem to predominate (1) the "touch" system, wherein the attention of the typist is not directed at the machine, and (2) the "sight" or "hunt and peck" system wherein the attention of the typist is focused on the machine. In either case the manipulation of the keys can become an automatic process, the "touch" system producing greater accuracy, speed, and a more even impression of all characters in the typewritten copy, while the "sight" system produces greater irregularity in the weight of the impression, and is generally heavier.

The importance of these rather rusty observations lies in the difference in the style of characteristic typographical errors which each method may produce.

Indeed, spelling errors or styles, which must include typographical errors should be the first of several features serving to identify the typist which we have to consider.

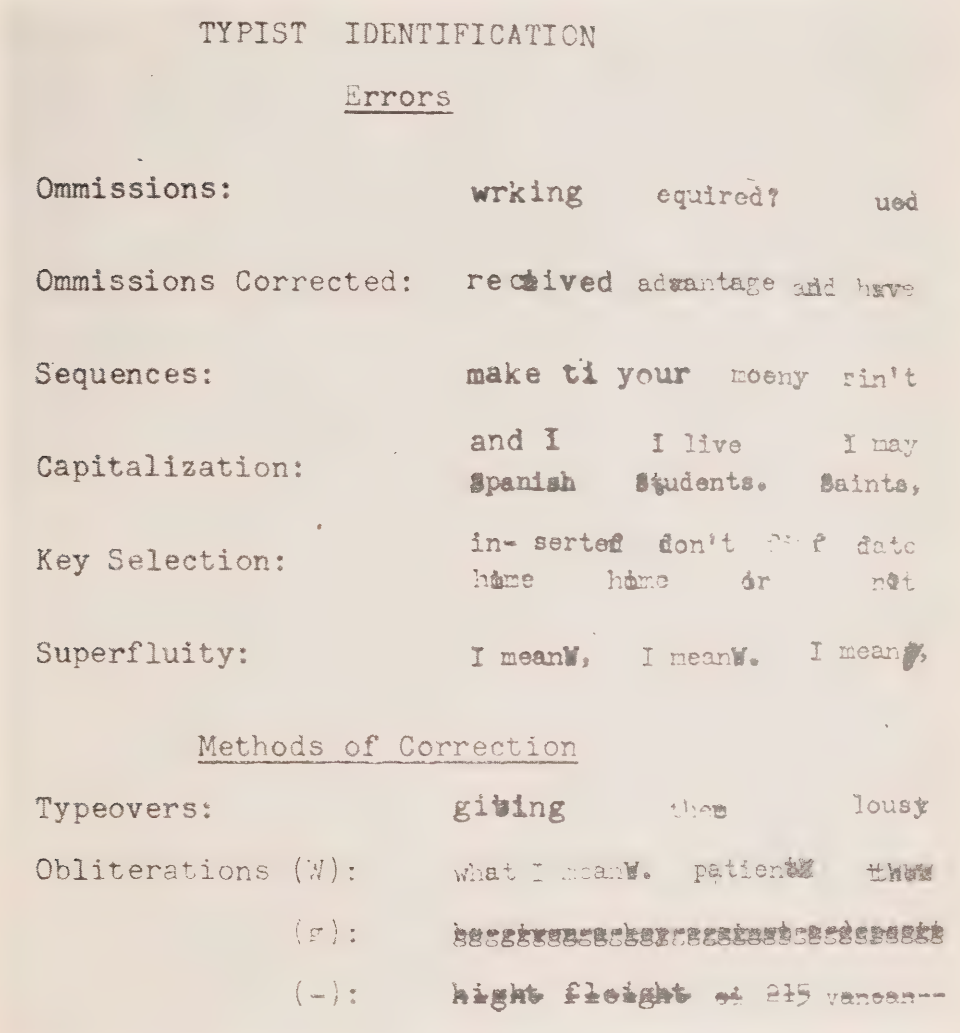


Figure I

(1) *Spelling Errors or Styles* (see Fig. I)

What might be construed as spelling errors can be divided into three categories:

(*a*) true spelling errors,
(*b*) foreign spelling styles,
(*c*) typographical errors,

TYPIST IDENTIFICATION

Punctuation

If Mr. Addison were to ask his stenographer once, say, twice, say, thrice, say eight times to do a certain thing. If she failed to execute it, what would he do? If Mr. Addison were like you, I know what he would do, he would keep her for the rest of his life.

Excessive use of comma: forward the balance without delay. „rigsmas and loans, of course, must be set first, and sewers and pipes also must come first, so, all in all, the collector would sit back and really start to think. Laterally, he would say to himself, we might but lose a lead pipe and a wash months behind in schedule, and, how, in one of the houses, you found, to your amazement, a

Excessive use of dash: need others' criticism - constructive criticism, however, - and I trust that an open book - I hide nothing - as you can see by the aforesaid - when I speak being with a soul and a conscience - no different from anyone else - , and because in the basement - a self-containe apartment,-and

Excessive use of question mark: Mr; how much longer could that sort of reckless con ginue??????? but will one ever succeed???

Errors 2.30 AM 11 AM. 11 AM.? 6 pm. 9 am, 4 am, 4 pm

Miscellaneous

Incorrect capitalization: Northern Neon sign Radiogram.

Division of words: again. However, to-morrow I shall continue to gather more informati' tion as to where and why. And so my time passes and much to my can be executed later. For the good or the bad, I think to have done bett better than expected. They were kind to me, particularly when they

Shift key operation:

One	Well,	In	This	There	Man'	But
Tall	[illegible]	They	One	[illegible]	Charles	The

Figure II

and caution must be exercised to avoid confusing typographical errors with true spelling mistakes. Our illustration contains a number of varieties of errors. Perhaps the most interesting aspect is the consistency of some varieties —the frequent substitution of an "f" for a "d", of an "i" for an "o", and the repeated tendency to add the superfluous letter "s" to the word "mean". These are the fashions of errors of an individual using the "touch" system, to whom the operation of the keyboard has become more of an automatic or reflex action.

(2) *Corrections* (see Fig. I)

Closely allied to a study of the errors in typewriting must be the study of the manner in which corrections are made, if any.

(3) *Punctuation*

As in a number of other instances, consideration must first be given to the question of whether or not peculiarities in punctuation can be attributed to the typist or to the composer of the document. In the case illustrated, it was not so much a matter of error as an excessiveness which lent this feature weight. (Fig. II)

(4) *Use of Capitals*

Again, the errors in capitalization will be of more value than adherence to the rules. (Fig. II)

(5) *Division of Words*

The commission of errors in the division of words at the end of lines may seldom enable one to go further than to say the typist does or does not commit such errors. Occasionally a typist does have a consistent and peculiar method of dividing words, or of correcting poor divisions. (Fig. II)

(6) *Shift Key Operation*

Here again, a word of caution is justified, for there always exists the possibility of a hasty examiner confusing features resulting from mechanical defects in the machine itself for idiosyncrasies of the operator. In the case illustrated, the fact that the examples were executed on two different machines permits one to assume with greater reliability that the condition here displayed is characteristic of the operator rather than the machine. (Fig. II)

(7) *Depth of Indentions*

While distinctions within narrow tolerances cannot be made in indention depths, gross differences can be noted and have been found to be a remarkably consistent feature of an individual, ranging from no indention to indentions extending 60 to 70 per cent of the copy line length. In the examination of such features it must be borne in mind that many people are prone to use the setting of a typewriter they are about to operate as they find it, and without change. (Fig. III)

(8) *Spacing after Punctuation*

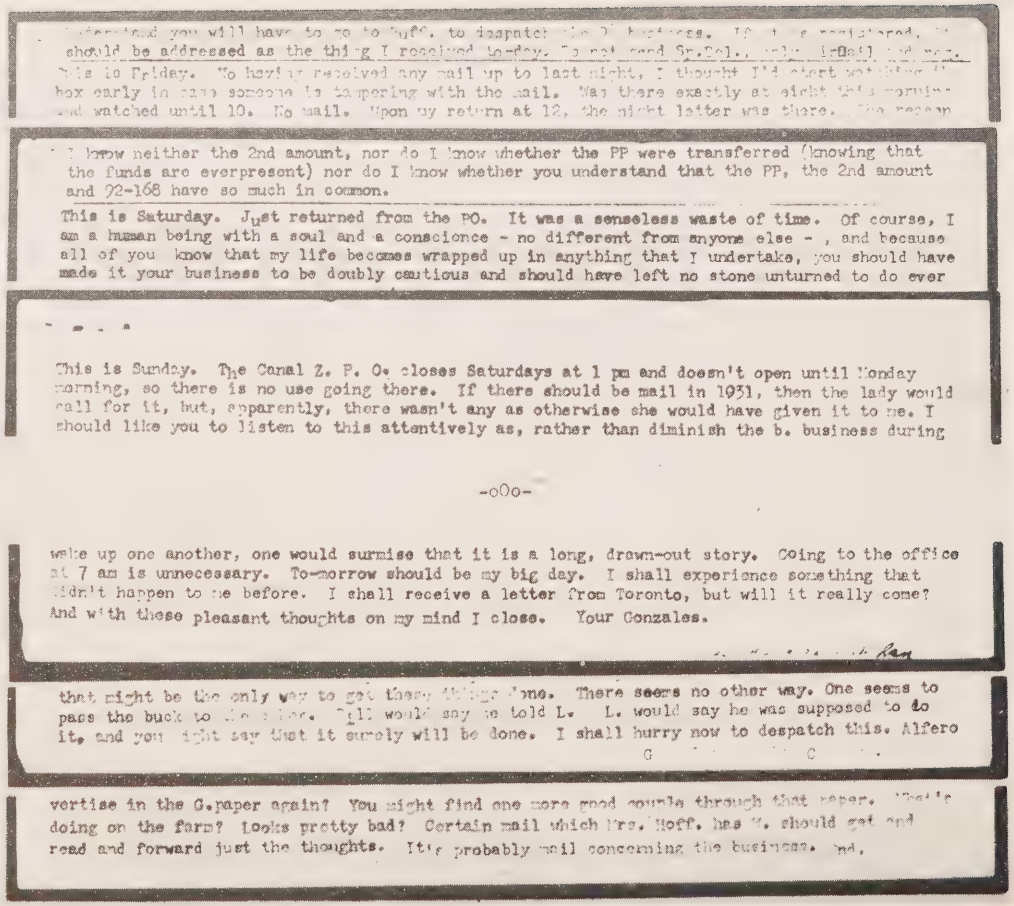
Generally speaking, when spacing after punctuation does contain some abnormalities, there is ample opportunity in an extended text to determine consistency of the feature and hence the significance of it as a characteristic of the typist.

TYPIST IDENTIFICATION

Arrangement of Openings:

(Note: insertions)

Arrangement of Closings:



understand you will have to go to Hoff. to despatch the P. business. If it is registered, it should be addressed as the thing I received to-day. To not send Sr.Del., only [illegible] and reg. This is Friday. To have received any mail up to last night, I thought I'd start watching the box early in case someone is tampering with the mail. Was there exactly at eight this morning and watched until 10. No mail. Upon my return at 12, the night letter was there. The reason

I know neither the 2nd amount, nor do I know whether the PP were transferred (knowing that the funds are everpresent) nor do I know whether you understand that the PP, the 2nd amount and 22-168 have so much in common.

This is Saturday. Just returned from the PO. It was a senseless waste of time. Of course, I am a human being with a soul and a conscience - no different from anyone else - , and because all of you know that my life becomes wrapped up in anything that I undertake, you should have made it your business to be doubly cautious and should have left no stone unturned to do ever

This is Sunday. The Canal Z. P. O. closes Saturdays at 1 pm and doesn't open until Monday morning, so there is no use going there. If there should be mail in 1931, then the lady would call for it, but, apparently, there wasn't any as otherwise she would have given it to me. I should like you to listen to this attentively as, rather than diminish the b. business during

-oOo-

wake up one another, one would surmise that it is a long, drawn-out story. Going to the office at 7 am is unnecessary. To-morrow should be my big day. I shall experience something that didn't happen to me before. I shall receive a letter from Toronto, but will it really come? And with these pleasant thoughts on my mind I close. Your Gonzales.

that might be the only way to get these things done. There seems no other way. One seems to pass the buck to the other. Bill would say he told L. L. would say he was supposed to do it, and you might say that it surely will be done. I shall hurry now to despatch this. Alfero

vertise in the G.paper again? You might find one more good couple through that paper. What's doing on the farm? Looks pretty bad? Certain mail which Mrs. Hoff. has for, should get and read and forward just the thoughts. It's probably mail concerning the business. And,

Figure III

(9) *Arrangements*

Not only the arrangement of opening and closing a communication, but the style and position of the envelope address should also be taken into account, if and when possible (Fig. III)

(10) *Margin Evenness*
(11) *Margin Widths*
(12) *Balance of Material*
(13) *Length of Lines*

In these four aspects allowance must be made for wide variation with some individuals, and the exception will, of course, be of more value than the rule. In the case being illustrated, the typist displays a tendency to have narrow margins, using most of the available space as if economy conscious.

(14) *Unusual Character Use*

This category needs no further explanation and simply provides for those cases not otherwise accommodated.

(15) *Use of Numbers, Presentation of Amounts, Fractions*

In some cases these features will have to be considered in the light of the characters installed on the particular typewriter employed. As illustrated by our example case, the manner in which pages were numbered may warrant consideration.

Much of this evidence will serve a dual or even triple purpose. Having first established the composer to be the typewriter operator as well, it may then be considered as as further evidence of a common typist, when present in two or more documents.

To illustrate from the case at hand, the practice of obliterating errors by the repeated typing of another character is initially evidence of the person who composed the letter is being also the typist. Carrying the analysis a step further —the selection of a character for that purpose, if consistent throughout the documents under examination, now becomes evidence of a common typist.

It will be apparent that no mention has been made of the stock-feature of many authors which serves to identify typists, the characteristic weight of impression of different letters. While this may be worthy of consideration in some cases, the writer's limited experience has not found it to be of material assistance.

Summary

The analysis of typewritten documents for the purpose of identifying the typist or of establishing that a number of documents have been typed by the same person is an examination with definite possibilities. It does require, however, a number of somewhat ideal circumstances to obtain the most satisfactory results. Greater opportunities are provided in material constituting personal or anonymous letters and communications, than in other types of documents, and it is the former with which this paper has dealt.

The analysis of the typewriting can be augmented by an analysis of the language provided there is present the necessary evidence to establish the typist as being also the composer or author of the document in question.

It is the writer's submission that an analysis to determine that the composer of a letter is in fact the typist must precede the analysis to determine that two or more documents have a common typist. It may seem strange to consider, for example, the similarity in the salutation arrangements in this case as, first, evidence of a common composer, and, secondly, evidence of a common

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typist, when their value in the latter respect seems so much more obvious. However, to consider salutation arrangements as characteristic of the typist without further analysis is to *assume* that the arrangement is such that the dictation of another individual or copy book style would not normally produce it. When a proper identification of the typist with the composer is made, there is no necessity to make assumptions.

Finally, there seems to be no valid objection to the process being reversed, if the problem so requires, and the evidence of a common typist, if present, used as an assist in determining that two or more documents have a common author, provided, again there is also that evidence available from which to conclude that the typist is also the composer.

Discussion of Sgt. Huber's Paper

Lt. SMITH: I would like to know how you establish the touch system in those compositions.

Sgt. HUBER: Yes, I thought someone would ask that. It is on the basis of the touch system being the more automatic or reflex action and being responsible for a more consistent type of error. Now in this case, as I illustrated, a very consistent error was the substitution of one letter for another; for instance, the "o" and the "i" and you will appreciate the "o" and the "i" have a somewhat similar position on the keyboard one being beside the other. It is an error in finger manipulation, I feel, in these cases and that type of error in finger manipulation is more likely to occur consistently with the touch system than with the "hunt and peck" system where your errors might occur either one direction or the other of the required key.

Cst. ZITZELSBERGER: I think under your heading shift key operations it is an indication of the touch system there, too. The upper case letter was typed and then the lower case appearing below the base line, the lower case being caught before the carriage dropped into position.

Sgt. HUBER: I think it is a definite indication of one of two things—either a fast operator or a slow operating machine. While my illustrations were for two typewriters, actually four typewriters were involved in the production of these documents, and the same tendency appeared almost consistently throughout the operation of all four machines. Therefore, I am inclined to think it is the individual's characteristics and it may well be that this, too, is dependable evidence of the touch system rather than the "hunt and peck" system which again is a slower more awkward operation of the keyboard and less likely to produce that type of error.

Cpl. de la DURANTAYE: Then how do you account for the "th" where you get the "h" below the base line after the capital letter "t"? In that case he has his right hand on the shift key to print the "t" then has to take his hand from the shift key to print the "h", isn't that right?

Sgt. HUBER: Yes, possibly so, depending on the individual's reach and his speed of operation. I can see your point. You are feeling that the distance is sufficiently great that the time elapsed would allow the carriage to return to its proper position and, therefore, the "h" should have been in line.

Cst. WRENSHALL: As you pointed out it depended on his reach and whether or not he automatically lifted his finger before he started the "th" or didn't actually lift his finger from the shift key until he was on his way to hit the "h".

S/Sgt. EVES: Regarding language and punctuation, are we not setting ourselves up as experts in grammar; are we not leaving our field of specialists?

Sgt. HUBER: That is a very good question. I do not suggest that this should be carried too far. I do suggest, as I mentioned, that gross distinction can be made and those are the distinctions which I have made in this case. Whether or not fine distinctions are possible which would be the type of distinction a more specialized individual would have to make and whether or not they can be made reliably so and whether we should endeavour to make them is another question. I don't suggest that we should. I would be more inclined to say that we should restrict ourselves to those distinctions which we are able to make with some dependability and without a particular study of that field of endeavour.

S/Sgt. EVES: I think a number of those commas for example that you mentioned are quite correct in their positions. When they are read out as you have done there is exaggeration, e.g., commas on either side of "of course" and a comma after "however". I think they are quite legitimate.

Sgt. HUBER: Oh, yes, and, in fact, much of his punctuation is quite legitimate but it is also excessive.

S/Sgt. EVES: Yes, but the point I am bringing up and which you have actually explained is whether we can actually go into court and give such evidence. I think it is going out of our field a bit too far, personally.

Mr. WALTER: In a battle of that kind in a similar matter they brought in a teacher in English. He testified.

Sgt. HUBER: My point in presenting it to you in this fashion is to see whether you agree with me that these gross distinctions in language can be used by us to identify the typist, a common typist. Once it has been established by other evidence in your documents that the individual who composed the document also typed the document then why can you not use such things as the obvious errors or excessiveness in punctuation to substantiate the other evidence which you had in the typewriting alone to indicate that this is the product of a common typist.

Mr. WALTER: It would be within your province to use the spelling, wouldn't it?

S/Sgt. EVES: If you are a good speller.

Cst. HODGINS: That would be a similar case also with handwritten anonymous letters. If we are not to consider ourselves experts in the grammar field, then we should be fortified by an expert in that particular field when we identify handwriting.

S/Sgt. EVES: Yes, I think it holds there, too.

Cst. ZITZELSBERGER: In my opinion if the divergence from grammar is sufficient I don't think the examiner will endanger himself—that is the document examiner.

S/Sgt. EVES: You would be prepared to undergo cross examination on grammar as an expert, would you?

Cst. ZITZELSBERGER: No, I am trying to make the point that if the divergence from proper grammar is great enough to be easily seen by the judge or the court, you would not be in too much danger.

S/Sgt. EVES: But in order to know there is a divergence, you have to know whether it is proper grammar, don't you?

Cst. ZITZELSBERGER: That is true.

Cst. HODGINS: I should like to see if you could go further and identify two people as writing one letter—one as the composer and the other as the typist. It will probably be only half as strong in each case; but you will have the composer's language and the word styling and word usage etc., on the other

hand you will have the typist's own individual style of punctuation, word breaks and a number of other things that you mentioned. Do you think in some cases it would be possible to identify not only one but both of them?

Sgt. HUBER: It is not exactly a question within my submissions at this time in that what I was intending to do is to suggest that the evidence which one might reasonably use in one case can be used to augment the evidence which you have in the other case. Now whether or not one can get sufficient evidence in either case independently to make an identification of the composer or the typist is, of course, another problem and in exaggerated cases it may very well be that on the basis of the typewriting alone, without considering the language, that you could get sufficient evidence to identify the typist. In this case I am suggesting the use of language for support, having first established that this typist is also the composer.

Cst. HODGINS: This was a very extensive case you were dealing with—there were some ten or twelve letters. There was a great abundance of both those types of faults—grammatical faults or whatever you may call them—and typing errors. I suppose you wouldn't be in a position to know if those letters had been dictated by one person and typed by another, you may have been able to come to a relatively positive conculsion on the whole.

Sgt. HUBER: I don't know; I think in this case I was decidedly influenced by the grammatical features which were so apparent to me. By considering the typewriting alone, without considering the subject matter, etc., I do not know off hand whether I could have arrived at that same conclusion.

Cst. WRENSHALL: I think S/Sgt. Eves has made a very good point—we are not necessarily experts in grammar if the examiner were to observe and give court observations in similarities etc. Here is a good place for the examiner to present his facts but not an opinion.

Mr. MARSHALL: These erorrs—the illustration of repetition, of peculiarities in grammar—do not require a grammatical expert.

Sgt. HUBER: I think these are the type of points which a Jury could appreciate for themselves and if they can appreciate them for themselves, then we are entitled to use them to substantiate our evidence.

Cpl. HEAD: Suppose we are dealing with a threatening letter in which the writer has spelled the word "heard" "herd", the word "straighten" "straiten" and a few more like that. I don't believe we should ignore them.

S/Sgt. EVES: May I make it clear that the way I originally brought up the matter was in the form of a question rather than a statement. I was simply introducing this question for discussion; I think it is worthy of discussion.

Mr. WALTER: In the Hauptmann case some of the experts pointed out ten misspelled words in the ransom note—exactly the sume number of words misspelled in the same way in the standard handwriting.

Evolution of Accidental Identifying Typewriting Characteristics

BY

Cst. A. ZITZELSBERGER

Crime Detection Laboratory,
R.C.M.P. Regina

The increased use of the typewriter in the home, office, and school has created greater familiarity with the machine and its operation. As a consequence, it can be expected that document examiners will be confronted with questions involving typewritten documents with increased frequency.

The examination of typewritten documents has primarily been a question of:—

(1) Determination of the probable make and model of a machine.
(2) Identification of an individual machine.

Examination may also, to some extent, reveal the degree of expertness of the operator and significant features indicative of a particular typist.

The authenticity of the date of production of a questioned document may be solved by an examination of the style of type in the document and knowledge of when that style of type was manufactured in relationship to the alleged dating of the document.

Further questions may arise, however, necessitating a determination of the date of production of a document on a particular machine under conditions wherein the "type style" date cannot be applied.

New typewriters, although examined and adjusted before leaving the factory, bear identifying features classed as "original" or "innate" defects. Throughout the life of the machine, usage and accidents create further "acquired" defects. The acquired defects play a vital role in the identification of a particular machine and are a record of the varied destinies of each machine. It, therefore, should also be possible to determine through the accumulation of these acquired defects the approximate date of production of a document on a particular machine.

With this in mind specimens of typing have been taken from a number of typewriters of various makes and ages at three month intervals over a period of three years in order to study the progressive development of these accidental identifying characteristics.

Illustrated in Figure I is an example of the form in which specimen typewriting was taken. Sheets of paper were cut to 4″ x 7″ size and the top folded down approximately 1/3 to receive a carbon paper insert. This method permitted the simultaneous collection of a ribbon specimen, a carbon copy, and a "direct carbon" of all the type characters of each machine. The advantages of this method were:—

(1) That the specimens were quickly taken without too much inconvenience and delay to the typist using the machine.
(2) When the lower portion bearing the direct carbon specimen is folded into the top flap, the small size permitted attachment to a file card and storage with a minimum space.
(3) The small size allows quick comparison.

Although the specimens taken by this method proved to be reasonably satisfactory in examination for type face design there proved to be, however, a number of shortcomings when these specimens were examined for acquired defects. The first and major objection is the lack of repetition of the letters in each specimen, which might, due to the ribbon, carbon or roller condition, or pressure on the type key, cause misinterpretation in examination of a single improperly reproduced imprint. Secondly, due to a lack of extended text on the specimen taken, the method is not entirely satisfactory for examination of vertical, lateral, and oblique irregularities in alignment. During the first two years this form was employed in taking specimens. Through the last year,

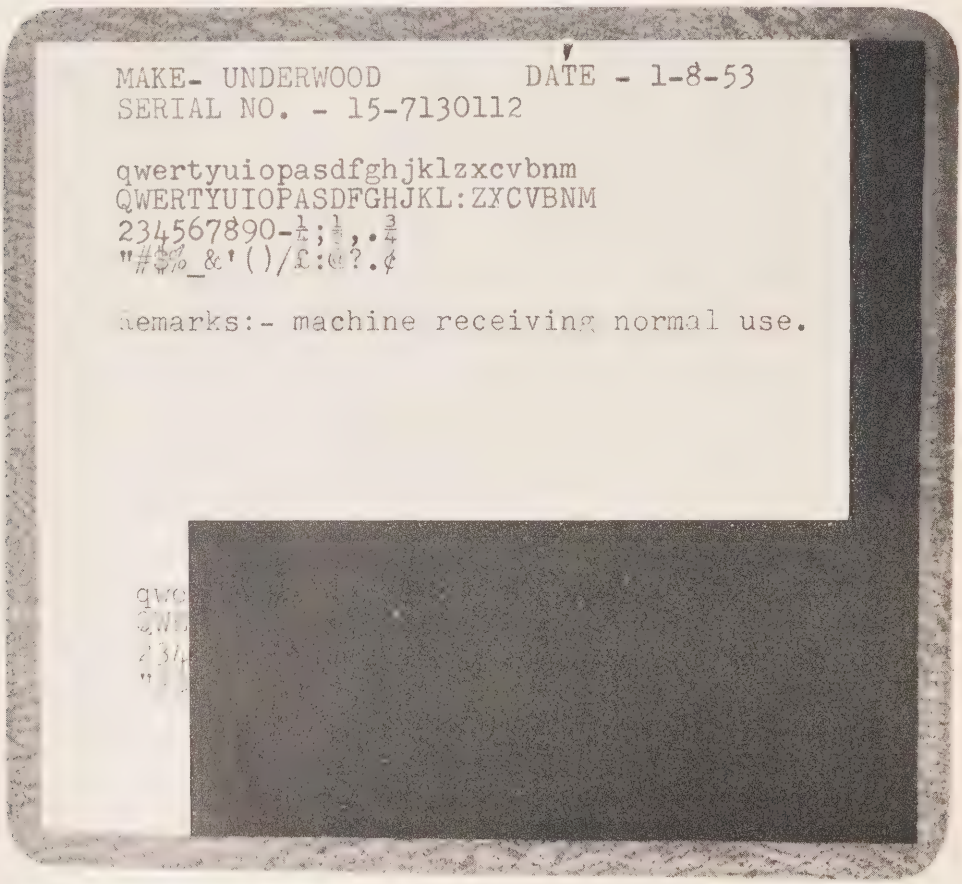


Figure I

the specimens were augmented, at first by typing a sentence on the specimen sheet and finally by taking an additional page of typing with the ribbon and also by the direct carbon method. It also has been found that it would have been advantageous to examine the machine in an endeavour to determine the cause of the observed defect and to examine the condition of the type faces when damage was evident on the specimen taken.

The specimens collected have been examined with consideration to:—

(1) Deformation to the design of the type characters.

(2) Lateral and vertical inequalities of printing, i.e., the striking of a character more heavily to the top, bottom or either side.

(3) Vertical, lateral and oblique irregularities in alignment, i.e., the striking of a character above, below or to either side of its centered position in a line of typing, and any deviation from the vertical.

Specimens have been taken from six new machines of various makes. Of these, specimens from three new Underwood Deluxe typewriters only, have been obtained for the full three years. The remaining machines have been in use for only a short period and no features of significance to this study have developed. None of the six machines was found to bear damage or defects to the type design while new. Each, however, did disclose lateral and vertical inequalities of printing in most letters which were of identifying significance. These consisted of the letters printing, primarily, with more weight to the left or right side and were most discernible in examination of the direct carbon copy with the aid of the stereomicroscope.

In the case of the three aforementioned Underwood typewriters it was found that one of these machines, in addition to the innate features of vertical and lateral inequality in printing produced the further individualizing characteristic of consistently typing a concave line. That is, the line rises in the center as progressing from left to right. Examination of recurrent specimens taken from this machine has disclosed only one acquired defect in its three years of usage.

Illustrated in Figure II is the upper case "A" as it appeared in specimens taken January, 1954, October, 1954, and August, 1955.

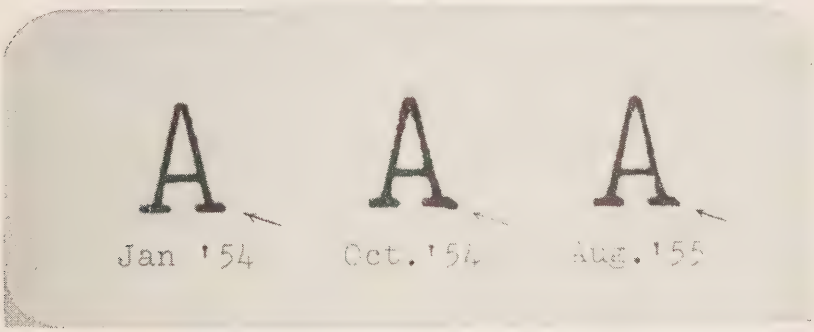


Figure II

The machine has been used solely by one skilled typist and other than the above type damage, no significant change has occurred in the three years of use of this machine. Dating of a questioned document produced on this machine by its acquired defects would have to be confined to a determination of whether the document was produced before or after the occurrence of damage to the single letter.

The second of the Underwood typewriters also disclosed an individualizing innate characteristic in addition to the inequalities of printing. The upper and lower case "m" consistently printed with a slight tilt to the right as illustrated in Figure III below. This feature has been found to be consistent through the three years of use of the machine, but would be of significance in placing the approximate date of a document produced on this machine at a later date should a change occur in the manner in which the letter prints.

The second line of the illustration shows the single acquired defect which has occurred since this machine was put into use in July, 1953. Damage to the outside end of the right foot of the letter "x" is seen to be of a progressive nature in recurrent specimens. In the first specimen, taken July, 1953, the letter is in an undamaged condition. The second "x" illustrated shows the condition of the letter in a specimen taken in August, 1954, one year later. The end of the foot, although not shortened has been deformed. In the final specimen, taken in February, 1956, the foot of the letter has been visibly shortened and is slightly spread at its end. The progressive nature of the damage to this letter would permit accurate dating of a questioned document produced on this typewriter.

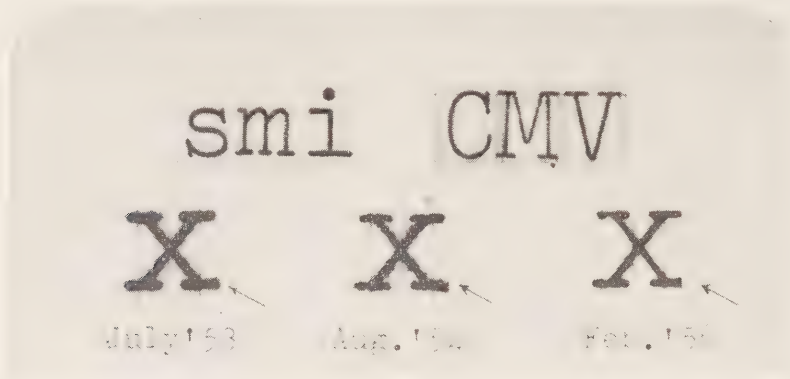


Figure III

The third new Underwood typewriter did not have innate characteristics other than the lateral and vertical inequalities of printing previously mentioned. Examination of recurrent specimens taken from this machine disclosed the following illustrated acquired defects.

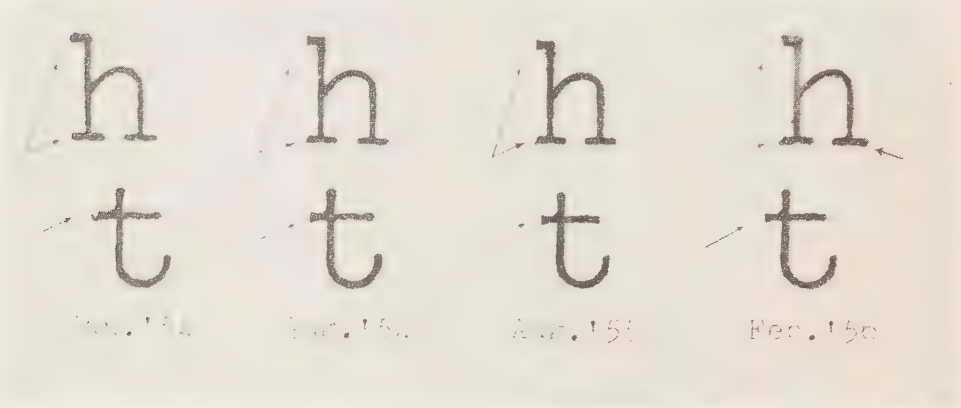


Figure IV

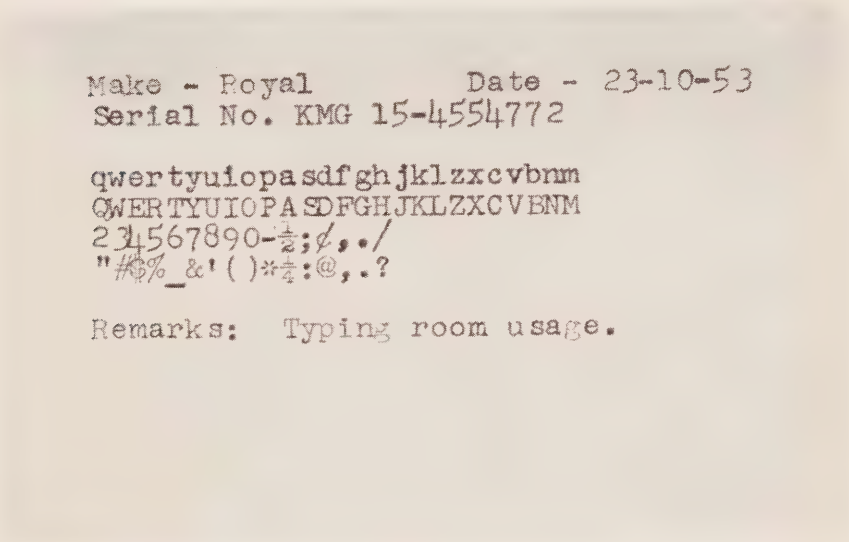
In January of 1954, the letter "h" appears undamaged. The cross stroke of the letter "t" does, however, show a deformation. The printing edge of the arm has been cut into at the extreme left hand end and slightly depressed. The specimen taken in August, 1954, a period of seven months, has

disclosed damage to both the upper and lower left serif projections of the letter "h" while the left end of the cross arm in the letter "t" has been further damaged and decidedly shortened. In August, 1955, one year later, no change is observed in the damage to these letters. The specimen taken February, 1956, seven months later, discloses no further visible damage to the letter "t" or to the left hand projections on the letter "h". However, further damage to the letter "h" has appeared in the form of a slight deformation to the outside end of the right foot of the letter. The acquired defects in the type faces of these two letters, in combination, would permit well defined dating of a document produced on this machine.

In addition to these specific acquired defects it was found that in this brief three year period of usage these three typewriters exhibited an increase in both vertical and lateral irregularities in alignment. These were not of a large or consistent nature but rather indicated a progressive loosening of the working parts of the machines.

Additional periodic specimens were also taken from machines which were not new at the time of obtaining the initial specimens of typing but varied considerably in age. In addition, the machines were being used by a number of unskilled typists and beginners. As a consequence, these machines exhibited a proportionately high number of acquired defects with no indication as to their date of appearance. These defects were not confined entirely to type face damage but were found to be of very nearly every form.

Figure V shows the ribbon portion of a specimen taken in October, 1953, on a Royal typewriter put into use in May of 1952.


Make - Royal Date - 23-10-53
Serial No. KMG 15-4554772

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QWERTYUIOPASDFGHJKLZXCVBNM
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Remarks: Typing room usage.

Figure V

This machine is used entirely by unskilled and student typists. Examination reveals type face damage to the letter "u", a shortening of the upper left hand serif projection, spreading of the left end of the base of the letter "i", damage to the tail of the "a", damage to the upper and lower left serif projections of the letter "h", and, a decided shortening or rather a cut off of the outside end of the right foot of the letter "x". In addition, considerable lateral displacement

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can be seen in such letters as the "t" and the "s" which are striking well to the right of their contered positions.

As the damage to the machines is more extensive and was more rapidly developed, as is illustrated in the above specimen (a machine approximately a year old) it can be expected that the dating of a document produced by these can be determined within much narrower limits.

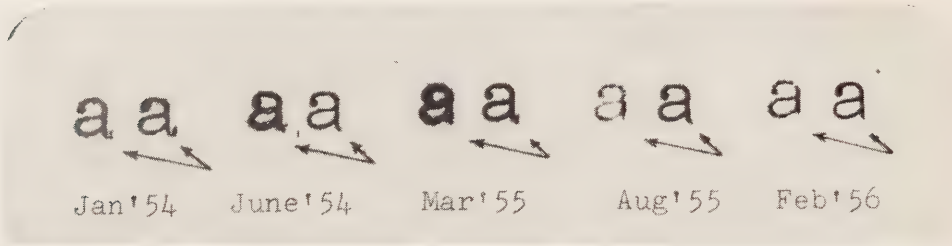

Figure VI

The illustration, Figure VI taken from recurrent specimens of the above-mentioned Royal typewriter, is a striking example of the progressive increase in a defect through usage. Shown are ribbon and direct carbon impressions of the letter "a" as found on specimens taken January, 1954, June, 1954, March, 1955, August, 1955, and February, 1956, a two year period. The damage to the tail of the letter is seen to increase steadily as each specimen was taken. This example illustrates a condition where close chronological dating of a questioned document could be achieved through examination of a single letter in recurrent specimens.

In addition to, and in combination with type face damage, other defects in any form acquired through usage are also significant in determining the approximate date of production of a document.

The following illustration is an example of a change in vertical alignment. The letter "a" both upper and lower case, as found in specimens taken July. 1953, August, 1954, and August, 1955, are illustrated.

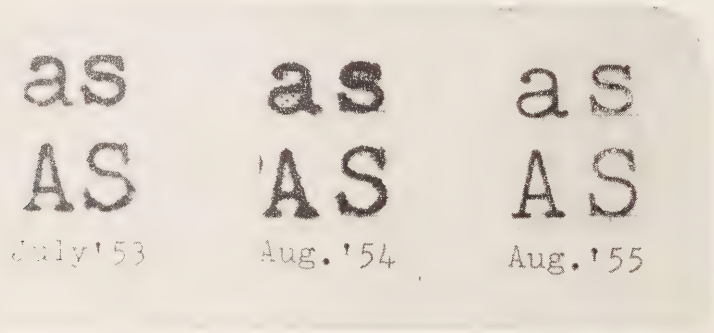

Figure VII

In the first specimen, taking July, 1953, both the upper and lower case, letter "a" are seen to be in proper alignment. The upper case "A" discloses a heavy imprint on the right side and has the appearance of being slightly tilted to the left. The second specimen shown, taken August, 1954, approximately a year subsequent to the first, discloses a drop below the baseline in both the

upper and lower case "a". The third specimen taken a year later, August, 1955, continues to disclose this defect in alignment. The upper case "A" is seen to be unchanged throughout. The right side continues to print heavily and no alteration is observed in the tilt to the left of the letter.

The illustration shows the value to dating that can be derived from a feature such as the vertical alignment of the letters.

An example of a change of oblique alignment appears in the following illustration.

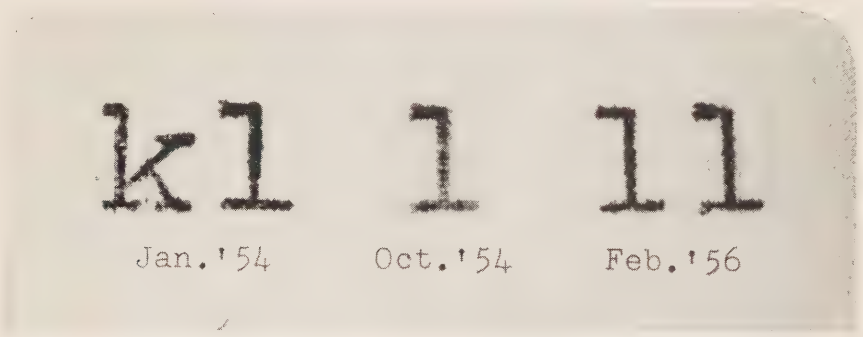

Figure VIII

The letter "l" is seen in recurrent specimens to tilt to the left. In the first specimen dated January, 1954, the letter "l" is in vertical alignment. In the October, 1954, specimen the letter is slightly tilted to the left, whereas in the February, 1956, specimen, a decided divergence from vertical to the left can be observed. This will illustrate the significance of a change in a letter from the vertical to an oblique position in the problem of dating a document through its acquired defects.

The specimens taken have not disclosed a significant change in lateral alignment of a letter such as to permit illustration. However, the letters "s" and "t" in Figure V, are out of alignment to a considerable degree in the specimen illustrated—a specimen taken after the machine had received only one year of use. Further evidence of a dating significance would occur should these letters be found to change from their presently misaligned positions in recurrent specimens.

The foregoing has discussed and illustrated the various forms of acquired defects occurring in a typewriter and their significance in determining the approximate date a document was typed on a particular machine. It has also shown that new machines in the hands of a skilled typist have not developed extensive damage in the first three years of usage and that which does occur develops slowly.

The typewriters which had received usage previous to the date when the first specimens were taken, disclosed extensive damage and it was found the damage was rapidly progressive in recurrent specimens. This is a result of the hard usage to which these machines have been put as they were used solely by unskilled and student typists. Further specimens taken from the new machine will disclose, whether there is, as a new machine becomes loose and worn through usage, an acceleration in the frequency of damage and also what is the most frequent form taken.

This study has shown that the development of entirely new damage to a character in a machine permits easier and more accurate dating of a document produced by the machine than changes in characters already damaged,

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particularly in the examination of ribbon specimens which show variable impressions depending on the age and condition of the ribbon and the force with which the type key is struck.

As a consequence, although the determination of the date of production of a document on a new or relatively new machine may be broad it can be effected more easily than in the case of a machine to which extensive damage has already occurred. In the case of the extensively damaged machine, further easily apparent damage is unlikely to occur and examination is confined to fine measurements in an endeavour to discover a change in an already damaged character.

Further, in a new or relatively new machine where the parts are tighter and unworn, a change in lateral or vertical alignment, or lateral or vertical inequalities of printing would show consistency and be of more easily discernible value than the inconsistency of typing found in old machines where characters show random variations from left to right in lateral alignment and both high and low in vertical alignment due to loose and worn parts.

This study has also illustrated the need for specimens of typing very nearly of the same date as a questioned document in cases involving the identification of individual machines. The rapid accumulation of defects in a machine receiving rough usage alters the acquired features of identification to a considerable extent in a short period of time thus creating the possibility of misinterpretation through inadequate standards of comparison.

In conclusion, examination for the purpose of establishing the approximate date of production of a typewritten document on a particular machine is a practical possibility and is mainly dependent on the age of the machine, the type of usage which it has undergone, the skill of the operator and the amount of specimen typing available.

Discussion of Constable Zitzelsberger's Paper

Sgt. HUBER: I gather you have noticed that in developing these accidentals, the serif has a tendency to become deformed before it is shortened or chewed away. Is that right?

Cst. ZITZELSBERGER: That is right.

Cst. WARREN: Did you notice that these deformities occurred more prevalently in one letter than in another possibly?

Cst. ZITZELSBERGER: Yes, in examining the numerous machines I actually tabulated how often it happened. I will just be general—in a total of 137 machines there was found a defect of the lower case "a" in 23 of the machines.

D/Sgt. SCHROEDER: Did you determine the reasons for this?

Cst. ZITZELSBERGER: One of the failings in the beginning of this project was that I started to collect the specimens on the side and waited for a year to see what developed and it seems to have shown that it would have been a very good idea to quickly examine the specimens, observe the damage and examine the machine to try to determine the cause of the damage.

D/Sgt. SCHROEDER: And of the 137 were any of those machines subjected to repairs in the interim?

Cst. ZITZELSBERGER: I really could not say.

Lt. PURTELL: Were any measurements made in the variations within the spacing of a letter?

Cst. ZITZELSBERGER: They were made roughly. I didn't try to tabulate them.

Mr. Park: Were these machines used by the same typist all the way through or were there different ones?

Cst. Zitzelsberger: They were used by different people—of the three new Underwoods—one typist used each machine throughout that three year period—the older machines were used by different people almost every hour of the day and by people who were learning to type.

Mr. Park: Would the difficulty at all be caused by the piling of the letters? You hit one letter and you strike another one before the first returns, and the typebars collide.

Cst. Zitzelsberger: As I said, I made no actual effort to determine the cause of the damage.

Lt. Smith: Did I understand you to say you were taking simultaneous direct carbon impressions?

Cst. Zitzelsberger: On the folded sheet, the top third fold is folded down in this fashion (illustrating) and the carbon paper inserted so that in typing on the upper half you have a ribbon impression and a carbon copy with the carbon paper projecting below. It is a matter of rolling the paper to the lower portion, and putting the machine on "stencil" and retyping to get a "direct carbon" copy.

Cst. Duke: I think you said with the Underwood typewriter over a three year period, there was damage only to one of the type face. Is it unusual for a machine over a three year period to develop only one defect?

Sgt. Huber: That is the point of your investigation, is it not? To find out just how rapidly these things do develop.

Cst. Zitzelsberger: That is right, and I feel it is a little premature to draw any hard and fast conclusions. I might add that this whole project rolls out of a special case involving the necessity of determining if the date on the document was actually a true date.

Mr. Walter: Those problems do occur and it is very difficult when you are presented with carbon copies of, say, a couple of letters with the date on, to say whether these letters were written on the date they bear; the only way that you have any success is to get an accumulation. It can be done sometime by these investigators who are almost magicians, I think; they go around and they gather up correspondence from the same source, from the same machine and you are then in a position to say just where these dated letters fit, in matters of that kind. One case in particular involved some oil rights and it just fitted in fine but it was a fake; that is they presented the carbon copies and said well, here are the carbon copies, we sent you the letters. Of course, the originals were never received, never had been written.

The Request for Genuine Signatures

BY

Mr. G. H. K. BROHIER

Government Analyst's Department
Colombo, Ceylon

Ladies and Gentlemen, I must first thank the organizers of this Seminar for inviting me to participate in it. It is a great honour to me personally, to my Department and to my country. After all, I am an unknown quality, an "x". Whether I illustrate the second half of Magistrate Strike's definition I don't know.

I should perhaps mention that I heard of this Seminar only a few weeks ago and have not been able to produce any original research as you have all done; but I hope the analysis I shall present will have some little value.

Before I approach my main subject perhaps I should tell you a little about the laboratory I represent. It is called the Government Analyst's Laboratory and is a Government Department.

The Department falls within the purview of the Ministry of Home Affairs. It is situated in Colombo and is in charge of the Government Analyst. It is divided into four main sections—the Forensic Science Section, the Food and Drugs Section, a Section we call the Miscellaneous Section and the Document Section. The work includes ballistics, toxicology, the examination of blood, the examination of textiles, food and drugs, water, milk, liquor, tea and coconut oil, in addition to the examination of questioned documents. A member of the Department is stationed at the State Distillery about twenty miles away and assists the Excise Department in preventing the manufacture of illicit liquor. The Coconut Oil Laboratory near the Colombo Harbour is manned by personnel from the Department and checks the quality of coconut oil sent by shippers for export.

If you visit the Department today you will find the entrance partly blocked by piles of timber. The Forestry Department telephoned the Analyist asking him to go to an "outstation" and examine some timber which had been seized as it was suspected to have been stolen. The Analyst replied that all examinations had to be done in the Laboratory; would they send it on? They did—a whole truck-load of it. Upstairs one sees about fifty yards of fishing net spread out on a corridor the rest of which contains about forty push cycles, all stolen property recovered by the Police. This haphazard collection of materials is attributed by the lighthearted, to the fact that the Laboratory was originally a lunatic asylum.

I just used the phrase "recovered by the Police". This implies that the Laboratory is not a Police Laboratory. It does work for the Police as well as for other Government Departments and for the Courts. Its function is chiefly to assist the Courts.

The Department consists of about seventy members and the Analyst is assisted by twenty-three staff members. The Laboratory is kept in constant contact with the latest developments in the various fields of work through their visits abroad. Incidentally, they acquire professional qualifications on these visits, eight of them having become Fellows of the Royal Institute of Chemistry

England. Six others have received specialized training abroad in their fields of investigation, after their first degrees. One of them studied ballistics at Berkeley University, California, and another toxicology at Berkeley, Harvard and Cambridge, England. The rest are associates of the Royal Institute of Chemistry or graduates in chemistry—all except the Chief Examiner of Questioned Documents, who is a barrister and who has specialized in History at the University, and myself who specialized in, of all subjects, Philosophy and Theology. We seem to be a strange crew, but the balance is restored by the second in command who has specialized in Chemistry.

The training abroad is carried on under a departmental scheme and is considerably supplemented by the scholarships awarded by the Colombo Plan Bureau for Technical Co-operation. It is on one of the latter that I have come to Canada on a refresher course with the Royal Canadian Mounted Police.

I am happy to state that we in Ceylon have been able not only to receive aid but to give it, in that we received into our Document Section a Colombo Plan student from Singapore, Mr. H. H. Lim, M.Sc. After training Mr. Lim in Colombo, the Chief Examiner of Questioned Documents, Mr. T. Nagendram, went to Singapore for six months to set up a document laboratory there. It is interesting to note that, having acquired the principles of handwriting identification in English, Mr. Lim has now applied them to the identification of Chinese writing and is meeting with considerable success. Incidentally, a good proportion of the work done in Ceylon is in Sinhalese and Tamil, the languages of the country.

The Document Section of the Government Analyst's Department was established in 1936 with a Ceylonese officer who had been trained in England. In 1946 another officer was appointed to assist him. He too was similarly trained. In 1949 I joined the Department. By that time it was considered that the Section had a sufficient reserve of knowledge and experience to train future assistants on the spot, provided members of the section made visits to the laboratories which are the acknowledged leaders in the field. This, gentlemen, I am now doing.

Did I say "a sufficient reserve of experience?" If figures are of any value, last year we had only about eight hundred and fifty document examinations, and we went to court only about two hundred and twenty times, sixty-seven of which fell to my lot.

After this rather long preamble I will now consider, briefly, the subject of this paper—the request for genuine signatures.

Genuine signatures are, of course, absolutely necessary to answer the question "Is this signature forged?"—except where the line quality and manner of execution alone stamp it as a forgery. I am restricting myself here, however, to the cases where the question asked is "Who forged this signature?" and where the productions are only (*a*) the suspected signature or signatures and (*b*) the specimen writing of one or more suspects.

In many cases genuine signatures are not required in order to say that the questioned signature was written by a particular suspect because the similarities between it and the suspect's writing are sufficient in number and significance to warrant a positive identification. In these cases a knowledgeable defending counsel who has read something—but not too much—of the subject can pose the question whether this opinion does not in fact comprise two opinions:

(1) that the signature is a forgery
(2) that the suspect forged it.

He would go on to point out that the first opinion, namely that the signature is a forgery, can only be arrived at after comparison with genuine

signatures. If no genuine signature were used the examiner's procedure, he would argue, is not logical and his conclusions therefore invalid.

If the defending counsel is even more knowledgeable he would argue that there are psychological differences between a person's writing and his signatures, of which a competent examiner must take note. In particular:

(1) the specimens produced fall into the category of handwriting as opposed to signature,
(2) the questioned signature must be treated as a signature until it can be proved that it is not,
(3) a direct comparison between the questioned signature and the specimen handwriting assumes that the questioned signature is mere handwriting, which is in fact the point to be proved by the prosecution.

If this argument is valid it certainly constitutes the fallacy of begging the question.

Without testing his argument for loopholes, the defending counsel could go on to argue that when a person decides to forge a signature he would naturally copy it from one that is genuine. In this process he would sink his own individuality and hide his own writing characteristics, adopting those of the person whose signature he is forging. It must be a rare examiner who could say that the suspect imitated a model and produced the result now before the Court, i.e. the questioned signature, even without seeing the model. Further ,if several people imitate a given signature all their efforts would be like that signature in varying degrees and it would be an even rarer examiner who would say that the signature in question was written by one suspect rather than by another.

It would considerably clarify the question if we would look at it from three points of view—the logician's, the examiner's and the Court's. From the logician's point of view to discover whether there really is a fallacy in the examiner's procedure; from the examiner's, to find out whether the most stringent logical tests are really applicable here, having regard to the material which is subjected to them; and from the point of view of the court, to assess whether the examiner has taken every precaution in the present case to avoid any error. As regards the logicality of the procedure: if A and B are identical it is irrelevant whether B is different from C or not; it is also irrelevant whether A and C are two things of the same genus but of undetermined species. The fact that the questioned signature and the specimens are identical makes irrelevant the question whether the questioned signature and the genuine signature are not. Similarily it makes irrelevant the consideration whether the questioned signature is handwriting or signature since it has been shown to be identical with the specimens, which are handwriting as opposed to signature, and hence the questioned material is proved to be handwriting.

By the same token the identity of the questioned signature with the specimens makes irrelevant the consideration whether any other writer had written it. The crux of the matter is of course the thoroughness of the investigation and the cumulative significance of the similarities seen.

This brings us to the examiner's point of view. He has got to show that the similarities are so numerous and significant that a positive identification is indicated.

Quite often the boot is on the other foot. For instance, a Magistrate in Ceylon once demanded to know of an examiner why he required genuine signatures when all he was required to do was to compare one signature with another and express an opinion.

In the face of such an objection it behooves the examiner to point out that suspected signatures fall into two categories: those in which no attempt

has been made to simulate the genuine signature and those in which such an attempt has been made. To both of these classes of signatures the objection can be made that it is not possible to say whether a signature is or is not a simulation unless it has been compared with genuine signatures.

This gives a different slant to the pseudological objection we have dealt with, namely, is it not necessary to find out whether a signature is forged before attempting to say who forged it? But these objections reflect the opinion of the defending counsel as to what *should* be the procedure adopted by an examiner in an investigation of this kind.

In answer it may be said that

(1) these logical distinctions do not apply to this kind of material and
(2) a forgery can be detected by its line quality alone.

The first approach may or may not be true, but the second is palpably inadequate. As we well know good line quality is consistent with simulation, provided the writer works from a practised hand and a good memory or both. On the other hand the line quality of a signature may be bad for the very good reason that the usual writing of the genuine writer is bad. The poor line quality is the fact and the simulation-theory is an attempt to account for the fact. But it is not a theory that can be verified unless the thing simulated is examined. So that whether the objection in its present form is valid or not, it is not possible to make any judgment about simulation without examining genuine signatures.

This does not mean that no progress can be made in any case without genuine signatures. Identification of a questioned signature with a suspect's writing makes no implication as to whether the questioned signature is simulated or not. Where there is no reason to suspect simulation the examiner could proceed with an examination that might lead to a conclusion—but with added caution.

Signatures which are not simulated could again be subdivided into two classes: those in which the suspect disguises his handwriting and those in which he does not.

The similarities between a questioned signature Q and a suspects writing A may point to A having disguised his writing and produced Q. On the other hand Q may be more similar to X's undisguised writing or even to Y's undisguised signature. If either of these alternatives are true the interpretation of the similarities between Q and A would undergo a radical change. This must always give the examiner pause. The disguise-theory is partly an inference to account for certain kinds of differences. But it may not be necessary to make any inference at all if X's writing or Y's signatures are produced. We may seem to have strayed a little from our theme but a moment's reflection will show that this is the very heart of the request for genuine signatures. The possibility that our interpretation of the significant characteristics observed might have to be changed in the light of an examination of the genuine signatures is the negative reason of our request for genuines, the positive side being the possibility that they will provide additional evidence on which to base an opinion.

Even in identifying an unsimulated, undisguised signature with the writing of the suspect X above, one should remind oneself that:

(1) a signature usually consists of three capital letters and one or two words
(2) these are now elements in a direct comparison of two handwritings, and that

(3) this material would seldom be sufficient to express an opinion in a straightforward comparison of handwriting.

When, on the other hand, there is reason to suspect simulation the examiner will, of course, ask for the thing simulated. Not that the genuine signatures must provide a "yes" or "no" answer to the question "is this signature simulated?" but that if they are not provided the question itself is meaningless.

In spite of all that has been said above we as examiners of questioned documents often express positive or negative opinions without comparison with genuine signatures—and rightly so, because we base our opinions on compelling similarities or differences and on varying degrees of experience in dealing with forged signatures, and because *we* must be the ultimate judges whether genuine signatures are necessary for a proper examination in any particular case, and should, I think, take up in Court the point of view that in this business the only general rule is that there are no general rules; because the moment we admit a general rule and exceptions to the rule, we invite the objection that the only thing an exception proves about a rule is that the rule is false. However, it is well to revise occasionally the possible objections that could be taken to our procedure and their results and to be prepared to show that in the particular case under consideration these objections are not tenable.

Where genuine signatures *are* requested the charge is sometimes made that the examiner is biasing himself. Bias is alleged to creep in after the examiner has found a signature to be forged and is comparing it with suspects' writings. The tendency, so the objection runs, will be to look for similarities rather than differences and to lay more stress on the similarities than would otherwise be the case. There are three important points to be made in reply:

(1) A competent examiner will take into account the possibility of bias if there is only one suspect's writing to be compared with the questioned signature, but would realize that he is not obliged to make a positive identification or even to give the Court or the investigators a lead at any cost. The cultivation of an academic detachment will discount any tendency to bias.

(2) If there are several suspects' writings to be compared with the questioned signature a tendency to look for similarities with all of them will defeat itself. Behind the question in his mind "Why suspect A rather than suspect B, C or D?" is the question "Why A, B, C or D at all?".

(3) The alternative to comparison with genuine signatures is to lay himself open to the criticism made earlier in this paper. Whether they are valid or not, the sole consideration governing his request for genuines must be whether they would help him to arrive at a conclusion and whether from his experience he entertains even a shadow of suspicion that the questioned signature is a simulation.

But speaking for myself and the laboratory I represent, we are independent of the police or other investigating authorities and we make it a general rule not to express any opinion on a questioned signature unless we have genuine signatures for comparison. We instruct the police on this point in our lectures to them. Because of this our reports which are made to Court are sometimes produced by the defence. It seems to us that the best service we can do the Courts is to build up a reputation for complete detachment, such that the Court does not take seriously any accusations of bias, to be vigilant to justify this reputation by maintaining our sense of detachment in

every examination we conduct, and being always ready to admit the limitations of our knowledge and our experience. If our report hinders the prosecution and ties the judge and jury up in knots, it will give a lead for further investigation. Very often the most protracted enquiry yields the most meagre results and we are forced to pay heed to the age-old warning "Teach thy tongue to say 'I do not know' ".

Document Examination, Past, Present and Future

BY

HERBERT J. WALTER
Chicago, Illinois

You will understand why I had some hestitation in accepting the invitation to appear here to talk to you experienced men about document examination, past, present and future. It would take a fair sized book to outline the difficulties, discouragements and experiences of the early document examiners and several volumes on the advanced techniques of those now doing the work that promises much for the future advancement of this useful occupation or profession.

I do not propose to undertake such a colossal task. No one writer could do it justice so I concluded that perhaps it would be best to begin with a brief review of the handwriting experts in Canada before and since 1910 and mention some matters on which they were engaged in various parts of Canada and include some of my experiences in cases from Toronto to Vancouver Island. It seems appropriate there should be recorded and perpetuated the names and work of some of these pioneer handwriting experts in Canada who, on their own initiative, with few books or scientific devices to assist them and without the recorded experience of others as a guide, had the courage to present their findings in court, in view of the restrictions, prejudices and other handicaps. I know of no better place to leave this necessarily incomplete brief record than with the laboratories of the R.C.M.P.

The early handwriting experts were teachers of writing, bankers, lithographers, engravers and clerks of courts. I have not found a record of their work in Canada before 1900 although no doubt they operated long before that time. We are all familiar with Daniel's interpretation of the handwriting on the wall at Belshazzar's feast. The Romans had their experts and Shakespeare touches on the identification of a handwriting. A very rare Seventeenth Century book dealing with handwriting experts is in the Albert S. Osborn Memorial Library.

The early experts were self-taught, with meagre equipment—magnifying glasses, measuring instruments and the old monocular miscroscope. Anyone who has used one of these latter instruments knows what they were up against, the image is upside down, the field of observation very small and the arranging of papers on the stage under the objective very difficult.

After 1910 when Albert S. Osborn published the First Edition of "Questioned Documents" the work was put on a sientific basis. Dean Wigmore of Northwestern University Law School said Mr. Osborn had established "A New Profession".

Montreal

Let us start in the Province of Quebec and travel to the West Coast and on the way mention some of the early workers in the document vineyard. There were several in Montreal. John J. Lomax, court reporter and Clerk of the Police Court for about half a century, was competent and highly respected by the legal profession for more than forty years. I have no information of

the cases in which he appeared. He was a friend and co-worker of Albert S. Osborn of New York. I leave with you a newspaper account of the famous Rex vs. Delorme murder case in 1923-24 in which several handwriting experts testified, including Albert S. Osborn, and some ballistics experts.

Toronto

Oliver B. Stanton of Toronto was well known and of good standing with the courts in which he appeared. In 1916 he was called out to Calgary, Alta. on a case, a nice trip for a handwriting expert in those days, on a per diem basis. About 1941 Mr. Stanton was subpoenaed as an adverse witness in the Blanche Duncombe will case at St. Thomas and Toronto. The lawyer for the Public Trust made him his witness and of course was bound by his answers. He impressed the Court as honest and competent. I am leaving some material and pictures of Mr. Stanton.

Winnipeg

George W. Donald, principal of the Winnipeg Business College, was an excellent witness until he shook the hand of John Barleycorn and retained the grip. He appeared with E. J. O'Sullivan on the George Foulds will case in 1908 in which Dr. Marshall D. Ewell of Chicago was called to testify about ink and signatures. I will leave some old photographs of handwriting in that case.

George Loos, accountant and teacher of handwriting, practised as a handwriting expert for some years.

Eugene John O'Sullivan, owner of the National and Winnipeg Business Colleges from 1900 to about 1915, earned the well deserved title of the finest penman in all Canada and the leading handwriting expert. He rendered service to the Royal Northwest Mounted Police at Regina and in the Western Provinces for many years. I am including a letter with this record, addressed to E. J. O'Sullivan, signed by Commissioner Perry, in which he indicates a too long delayed opinion is worthless. Mr. O'Sullivan moved to Montreal and established Colleges there. He testified with Albert S. Osborn in the T. H. Lecour case involving over $250,000 in 105 forged promissory notes. The case is mentioned on page 351 of "Questioned Documents, Second Edition". Part of the Argument by Mr. N. K. Laflamme, K.C., in which he pays a compliment to these two gentlemen, is included in this paper.

May I here tell about my introduction to the work of a handwriting expert. In 1910 I became associated with Mr. O'Sullivan at the Winnipeg Business College as teacher of handwriting and assistant principal. I had an opportunity under him to study the various systems of penmanship taught in Canada and the United States up to that time. He had a large collection. Before leaving London in 1902 I had learned the Old Round Handwriting from the engraved copy book headlines and then in 1890 to 1892 learned the Jackson Vertical System that replaced the other copy books in the London schools. Mr. O'Sullivan for some reason best known to himself considered I was qualified to take up the study of disputed handwriting. My association with Mr. O'Sullivan and later with Albert S. Osborn had a very decided favourable influence on my life.

Dr. W. A. McIntyre, principal of the Normal School of Winnipeg, was the expert for the Attorney General of Manitoba for many years, including Rex vs. Harrison tried at Portage la Prairie in 1914. Harrison was a bank manager at Carberry who forged and manipulated two or three hundred

promissory notes over several years until an alert bank examiner exposed him. F. G. Taylor, K.C., later Judge of the Court of King's Bench, and W. D. Card, K.C., Crown Prosecutor, both of Portage la Prairie, appeared for the Crown; H. R. Hooper of Carberry and Arthur Meighan of Portage la Prairie were for the defence. Dr. McIntyre was on the stand and just nicely started when to everyone's surprise Mr. Meighan changed to a plea of guilty for his client. The most relieved man in court was H. J. Walter. Imagine if you can the thoughts and apprehension of a greenhorn handwriting expert at the prospects of being cross examined, grilled and dissected by the Hon. Arthur Meighan. Some newspaper pictures of Dr. McIntyre accompany this paper.

Brandon

John B. Beveridge, Secretary-Treasurer of the School Board at Brandon, was retained as handwriting expert for the Attorney General of Saskatchewan for about twenty years. He testified in numerous cases in Manitoba and Saskatchewan. In an anonymous letter case tried in Saskatchewan he told me he was opposed by a lady school teacher, a graphologist, who claimed to be able to tell the sex of a writer. Her method was to take a gold wedding ring, tie it to a piece of cotton, hold it vertically over the writing. If the ring turned to the right it was female writing; if it turned left, it was by a male. I am sure the jury enjoyed that one. I understand she was tested in court but something went wrong with the works. Mr. Beveridge I believe appeared on several cases with Corporal Jonas Laight. I testified with Mr. Beveridge in the case of Rex vs. Fletcher, tried and convicted of murder at Portage la Prairie in 1917 and over the intervening years until he died in 1936. He occasionally consulted with me in Winnipeg on his way out to Saskatchewan to testify. In his hotel room one time he showed me a problem, he was satisfied the signature in dispute was a forgery but was mystified how to account for the very faint bluish tint throughout the signature, he should have answered that one. I suggested it looked like blue carbon paper to me, we put the magnifying glass on and he became radiant and said "By Jove, it is a tracing". The next time we met he related that he enjoyed putting that one across to the jury.

I know you have in your library Hagan's "Disputed Handwriting" but I have here Mr. Beveridge's personal copy I bought from his daughter in 1937. On the inside cover are two pictures of the gentleman. I will leave the book for your library so that you who are doing this work will note from the pencil writing and underscoring of much of the text that he made good use of this book. As a matter of fact, he always carried it with him. His picture will give you an idea of the man who over so many years travelled the thorny path of document examination in Saskatchewan.

On page 357 of "Questioned Documents, Second Edition", under "Traced Forgeries" there is a photograph that was used in the trial of a disputed document case at Moosomin, Sask. in 1927, decided by the Court with the Scotch verdict of Not Proven, appealed to the Appellate Court of Saskatchewan and judgment sustained. I have a complete transcript of the record of the trial in which Mr. Beveridge and I appeared on opposite sides. I believe it will interest you to have this transcript and I will send it down later. One sometimes enjoys reading of the tribulations of the other fellow.

Edmonton

Dr. David G. Revell of the University of Alberta at Edmonton, for many years handwriting expert for the Province, wrote me about an investigation he had made for the Estate of Ed Martin. Ed was a bachelor, living I believe

near Fort McMurray, a champion axeman, could chop and pile more cordwood than any other man in that part of the country. He was found dead in his shack of a rifle wound and a pencil handwritten note indicated suicide. He apparently had accumulated quite an estate and claimants appeared from Omaha, Nebraska, supplying a mass of handwritten material claiming Ed Martin was really Ed Carr, a relative of theirs who moved to Canada some twenty or thirty years previous. Dr. Revell examined the material and was of the opinion the writings were by the same hand. He sent all of it to me for examination and opinion. I spent endless time on the matter but could not convince myself that the writings of Ed Martin and those of Ed Carr were by the same person. The writings supplied were written twenty or thirty years prior to the death of Ed. Ed's writing indicated a lack of education and one who wrote infrequently, a poor writer; the Carr specimens were by someone who learned to write well and had a better education. I could not agree with the Doctor's findings.

Vancouver

R. J. Sprott, principal of the Business College at Vancouver, was a side line expert and I believe testified with Albert S. Osborn in the famous James Alexander forged signature case in that city. The case is mentioned on page 152 of "Questioned Documents, Second Edition" under "Traced Forgeries".

I have only dealt with the men I believe were reasonably qualified, of whom I had knowledge. I do not know of any who made a full time occupation or profession of it. Morris Jacobs, World War I veteran and Clerk in the Parliament Building, Winnipeg, did considerable handwriting expert work for the Crown after 1930. There were many who appeared in court occasionally. Inspector W. Mortimer of the R.C.M.P., Regina, had considerable experience as a document examiner as well as other branches of identification work and with his fine personality would have been an impressive witness. Thomas Duckworth of Regina, formerly with the Provincial Police, operated in Saskatchewan. J. J. Kenney of Moose Jaw was induced to take up this work by a friendly prosecuting attorney in that city and he appeared with Duckworth in the final trial of the famous Isaac Braun case at Prince Albert, Sask., in 1928.

May I impose on you my recollections of some experiences during my working years in Winnipeg and since. In 1928 a salesman had sold some oil stock to some of the residents of Nanaimo, B.C. One denied that he had signed a note. He wrote a strong, distinctive, rapid, shaded signature, fairly long, that would be difficult to simulate. A business college expert with no photographic preparation gave it as his opinion that the signature was a forgery. I testified the other way with photographs and enlargements. The jury found that the signature was a forgery. I have discovered and will leave two photographs from which you can form your own opinion and imagine the reasoning of the defence EXPERT. Arthur Leighton of Nanaimo, for whom I appeared, informed me afterwards that juries there had never been known to convict a fellow townsman and they certainly ran true to form. While sitting in a darkened corridor with a number of prospective jurors before court opened I overheard one of the men say to another "Mr. ——— never signed that note." but I did not get a clear view of the speaker. I mentioned this to Mr. Leighton, and he brought me into court after the jury had been chosen and asked me quietly whether I could point which of the jurors made that remark. I could not be sure.

In 1917 at Portage la Prairie, Man., I testified in Rex vs. Fletcher, murder. Fletcher was a Dr. Bernardo boy from London, sent out to a farm. He was charged with murdering the nephew of the farmer by blowing the back of

his head off with a shotgun. The need for handwriting experts was the identification of notes passed to the farmer's daughter, showing motive—jealousy. J. B. Beveridge of Brandon and I testified for W. D. Card, K.C., the Crown Prosecutor. The accused was convicted and hanged. Sitting in court behind the prisoner's dock I noted his unusually muscular neck. It is a matter of record that the hangman perhaps did not allow for this and Fletcher hanged a long time before he was pronounced dead. While on the stand, in some way I modified an answer or statement and I recall the Judge removed his pince-nez, turned to me with a severe look and said "Mr. Walter, you qualified that statement." "Yes, my Lord". There are of course cases where a qualified opinion is necessary.

In 1928 at Melville, Sask., Mike Hack was tried for the murder of George Edy. George was a bachelor farmer with a number of fine horses. One day the neighbours noticed only two were in the field, they went to his house, found the remains of a breakfast on the usual bachelor's table. Police investigators found horses, wagon, harness and seed grain missing and located them on the premises of a young farmer about ten miles away, a deaf mute, Mike Hack, living with his mother. The police wrote out questions and he wrote the answers. He said he bought the horses and other material from George Edy and produced two receipts that he said George gave him. They took Mike back to the Edy farm, searched everywhere including the well—no George. The Constable climbed on the manure pile to take a last look around, felt something give under his feet, got a fork and removed the top of the pile and there lay George Edy. Mike Hack was tried in the court of Judge Donald McLean and convicted. H. P. Sampson, K.C., of Regina and E. E. Gerrard, LL.B., of Melville were for the Crown. Hack was defended by P. M. Anderson, K.C., of Regina. I have here and will leave a complete transcript of the case for your files.

In August 1930, soon after I came to Chicago, A. J. Andrews, K.C., of Winnipeg, wired me to meet him in Regina where he was defending Harry Bronfman. I had made an examination for Mr. Andrews of handwritings in hotel registers before leaving Winnipeg. I hurriedly prepared for trial and went to Regina. The matter was heard by Mr. Justice Taylor and jury. I sat around for a week, then one day Mr. Andrews came out to the witness room and said "Walter, you can go home, they have admitted everything I brought you here to prove, but if I hadn't they would not have admitted a thing".

Some of you may have heard or read of the five trials of Isaac Braun of Rosthern, Sask. He came to Canada from Odessa, Ukraine, Russia, was a grain buyer there. He sued a real estate man, H. P. Friesen of Saskatoon on a $5,000 promissory note. The paper of the note was about two inches deep, the width of an ordinary letter sheet of paper and written with indelible pencil by Isaac Braun. The signature H. P. Friesen was at the lefthand side of the note with his Saskatoon address close to the bottom edge of the paper, a suspicious circumstance. Braun had two young Russian witnesses who said they were in a restaurant and saw him pass money to Mr. Friesen, they did not know how much. Braun won his case and $5,000. Some time after, the two alleged eye witnesses got cold feet, went to the Crown Counsel and said they wished to change their story and ease their consciences. Braun had paid them to commit perjury, they had not seen any money passed and were not in the restaurant. R. H. Bonnar, K.C., of Winnipeg, a famous defence lawyer, was engaged with Walter A. Tucker of Rosthern to defend Braun. After four trials the case was moved to Prince Albert with Chief Justice Brown

presiding. The Crown engaged two experts, Thomas Duckworth and James J. Kenney, an insurance man who experted on the side. I had previously made an examination for Mr. Bonnar in Winnipeg and gave an adverse opinion on the disputed documents, some cut up and pieced together letters in German Gothic script. Before the trial started the R.C.M.P. served me with a subpoena to appear in Prince Albert for the defence. Mr. Tucker had the subpoena issued with the sanction of the Attorney General on the ground that Mr. Bonnar had dropped out of the case, the Crown had two eminent lawyers and two experts and he was entitled to some expert assistance on the documents. I was in Prince Albert two weeks. The Crown experts used my binocular microscope in court and the Judge told the jury that they would have the use of the microscope the same as the experts when they retired to deliberate. Mr. Tucker did not release me until the trial ended. Braun was convicted, sentenced to five years and deportation. While at breakfast after the trial, with the court reporter, Mr. Edwards, Mr. Tucker and some of the defence personnel, the Chief Justice came over and dryly remarked "Mr. Walter, the dark horse". The court reporter nicknamed me "the custodian of the microscope at a per diem rate".

Document Examiners in the U.S.A.

The following is a very incomplete list of some of the early United States handwriting experts:

Daniel T. Ames, Albert S. Osborn, William J. Kinsley, Loren C. Horton, David H. Carvain, Elbridge W. Stein, New York City, William E. Hagan, Troy, N.Y., William E. Dennis, Brooklyn, S. C. Malone, Baltimore, F. B. Courtney, Detroit, W. A. Drake, James I. Ennis, Marshal D. Ewell, Howard A. Rounds, Robert M. Walker, Jay Fordyce Wood, Chicago, John F. Tyrrell, Milwaukee, J. C. Shearman, father and son, Wichita, Kansas, Gus Mechin, Ralph Becker, St. Louis, George H. King, Denver, Oscar E. Heinrich, Messrs. Kitka and Eisenschimel of San Francisco, Milton Carlson, Los Angeles, Frank Davis, William E. Hingston, Mr. Southworth, Boston, Dr. Louis D. Schulhofer, Birmingham, Alabama, Messrs. Spencer and Soule, New Orleans, and many others.

William E. Hagan of Troy, N.Y., published "Disputed Handwriting" in 1894. He was a chemist. Those who have read the book were no doubt impressed by the unusual length of some of the paragraphs.

William E. Hingston of Boston wrote "Little Clews", "Forgeries and False Entries" and "The Settling Price". He was one of the witnesses in the famous Hill Will case tried in Toronto in 1923-24.

Daniel T. Ames, "Ames on Forgery", 1899, was an expert penman, editor of the Penman's Art Journal and was well qualified. I was informed that as a witness he was not too impressive on account of the monotonous tone and length of his testimony. He was one of the experts in the Dreyfus case.

William J. Kinsley published a number of articles. Mr. Osborn stated that Mr. Kinsley was an excellent witness but was prone to anatagonize and battle with opposing attorneys. He lived at Nutley, N.J., and his hobby was raising prize Bantam chickens. In cross examination a lawyer once suggested that this was Mr. Kinsley's avocation. He replied that it was. The lawyer then said "We are going to make a Minorca out of you". Mr. Kinsley's answer was "Don't crow too soon."

David N. Carvalho published "Forty Centuries of Ink" in 1904. He was a professional photographer and made court exhibits for Daniel T. Ames and so drifted into the work. Mr. Osborn said he was rather ostentatious, hired a coloured boy to carry his brief case to the stand but he made an impressive

witness with a very definite way of presenting evidence. In one matter, on being asked his opinion of a questioned document, he picked it up, slammed it down, saying to the jury "It's a rank forgery". In those days typewriters were not much in use. A typewritten document was brought to Mr. Carvalho to identify the make. He took one look and said "It was written on what we call a Remington". The same attorneys took the document to Mr. Osborn who demonstrated that it was written on an Underwood. Mr. Carvalho had never heard of an Underwood machine and from then on any typewritten document that was brought to him was either written on an Underwood or a Remington.

Persifor Frazer was a university professor in Philadelphia and wrote several editions of his book "A Manual of the Study of Documents" or "Bibliotecs or the Study of Documents".

Milton Carlson of Los Angeles published a small book "Handwriting Testimony and Kindred Subjects" in 1914.

James I. Ennis of Chicago was first a banker then a lawyer and a handwriting expert. He died about the time I came to Chicago. I heard from many sources that he was an excellent witness. In his qualifications he stated he started as a junior clerk in a bank and part of his duty was to dust and sweep the bank. One cross examiner suggested that he used to do the dirty work of the bank and was still doing it. Mr. Ennis replied "I am still a lawyer".

Francis B. Courtney of Detroit wrote "Methods of Detecting Forgery and Raised Checks for Bank Cashiers" in 1906. Many of the illustrations in that book show his superb skill as a penman. He was a professional penman and teacher of handwriting and for many years did questioned document work as a side line until about 1912 when he moved from Cedar Rapids to Detroit and devoted the whole of his time to this work. He was associated with A. N. Palmer and was the author of one of Palmer's Penmanship Manuals. I appeared on many cases with Mr. Courtney and was impressed with his honesty and ability. At one time he was asked on cross examination "The jury did not think much of your testimony in that case did they?" Mr. Courtney answered "I don't know, I did not talk to the jury, did you?" In another trial he was down in front of the jury and mentioned that the writing was unconscious writing. The Judge stopped him and said "What do you mean by that?" He had a large card and immediately wrote the name of the city upside down and backwards in large script while facing the jury. He then held it up to the Judge and said "That is what I mean your Honour, writing done without premeditation, or unconsciously."

J. Fordyce Wood of Chicago was a court reporter for many years at Portland, Oregon, came to Chicago in 1919 and left his mark as a document examiner in many parts of the country. His wide courtroom experience as a reporter and his knowledge of the law and citations was most helpful to him and to the lawyers who engaged him. He established a wide and good reputation in Chicago and other parts of the country. He was a witness in the Hill Will Case.

John F. Tyrrell of Milwaukee was one of the most experienced men in the business, the Dean of Document Examiners, living to the age of 96. He was a most unusual man, almost unequalled in photography of documents, photomicrography, a most resourceful examiner and witness. Many lawyers have cross examined Mr. Tyrrell to their discomfiture. He was associated with Mr. Osborn at the turn of the century in some famous New York cases, the Mollineau case, the William Rice forged will case and others. In a trial in Chicago involving over $100,000 worth of raised and altered cheques in which the raising was done by the person who wrote out the cheques, using the same

fountain pen and ink, making a difficult proposition to demonstrate the raising, the cross examiner said to Mr. Tyrrell—"Then after he added that on to make it $12,000 what did he do?" Like a shot out of a gun came the answer, "I presume he went on his way rejoicing."

W. A. Drake of Chicago was a pupil of Platt R. Spencer, Sr., the father of the Spencer boys and the author of the Spencerian System of Penmanship. Drake attended the Log Cabin Seminary under Father Spencer at Geneva, Ohio. For many years he was the leading handwriting expert in Chicago and testified on many famous and important cases. Some newspaper records of his work will be left with other material here.

Dr. Robert W. Walker, dentist, was a friend and associate of Mr. Drake and after Mr. Drake died, Dr. Walker carried on his work as a document examiner and was associated with Messrs. Osborn, Tyrrell, Kinsley, Wood and others on some very important cases in the Middle-West. I testified several times with Dr. Walker, he was a very distinguished appearing man in the witness box. It may interest you to know he was born in Huntington, Quebec, of Scotch-Irish parents, and went to school with Chief Justice Brown of Saskatchewan.

Dr. Marshall D. Ewell, who testified in the Foulds will case in Winnipeg, was a law professor and handwriting expert in Chicago.

F. Brewester of Calcutta, India, published "Contested Documents and Forgeries" in 1932 and Captain Arthur J. Quirke of the Irish State Police "Forged, Anonymous, and Suspect Documents" in 1930. No doubt you have a list of these and a large number of others in your Library.

It would be impossible without lengthy research to do justice to all of the men in the United States in the past who have done much to elevate the status of questioned document examiners. There were many unqualified so-called experts doing this work in the past, there is an unhealthy crop of them now and I suppose there will be in the future. It is sometimes possible to expose them for what they are—fakers and charlatans—but now and then they are on the side with the cards stacked against the right and they succeed in the promotion of an "injustice".

Document Examination in the Future

What is the future outlook for the questioned document examiner? For the laboratory trained expert and the professional examiner of documents there is every reason for optimism provided he keeps up with the new techniques. He will have to study the new fonts of type that the typewriter companies seem to be forever inventing to make the work of the expert more difficult and complicated. The public taste at present is for special designs of type and colours of machines and the companies are catering to that business. I understand that Underwood will release some more special type designs in the near future and put out a dual pitch machine this summer—another headache.

The I.B.M. electric machines are becoming more and more popular and the demand for special type for them is growing. This will make things more complicated year by year. The demand for special type on the part of the larger and more active users of the executive and sales class is here to stay and we will have to accomodate ourselves to this situation. It will be a one man job to study and keep records of these special designs and spacing of the type on the various machines. Some member of your staff could well become a specialist in typewriting alone by collecting designs of type to determine the make and age of machine, also the work of various operators

to identify the operator or typist. Self-taught or untrained typists do many things alike and it is not too difficult to distinguish their work in contrast to that of a trained operator. The latter also sometimes have distinguishing habits of typing.

Measuring scales will have to be devised for the proportional spacing machines. Edwin H. Fearon of Pittsburgh, who is a specialist in this type of work, has designed and made some measuring scales. He is also an expert in photography, having designed and made some of his own equipment for special work. One of his recent acquirements is the making of third dimension photomicrographs of ink writing in colour.

The ball pen has created new problems. It is easier to forge a signature with such a pen. They are here to stay so a study should be made of these pens and the various inks and how they write. The Reynolds pen was the first, it was a poor tool, signatures could be and were transferred quite successfully from one paper to another. Some of the indications of forgery that are apparent with a steel or fountain pen and fluid ink, such as stops, joins, pen rests and patches, are not so readily interpreted in a ball pen writing. The ball pen makers are improving their pens and using a more fluid ink to replace the heavy, greasy ink formerly used. One characteristic of ball pen writing is what the trade terms "gooping", the leaving of bunches of ink on the paper as the ball revolves, and blind or uninked strokes: The ink accumulates as the pen travels across the paper and the ink gathers and is deposited in little blotches or goops so it is difficult to determine whether the pen actually stopped and rested to make a fresh start or continued on at the normal rate with just a natural deposit of the accumulated ink. The sequence of strokes in ball pen writing is a difficult matter. Indentations of the surface and embossing of the back of the paper must be considered. Erasures or eradications are more difficult with the ball pen, and are usually unsuccessful.

In a recent case it was claimed by a witness while on the stand in the trial of a personal injury case that several lines of a statement were not there when he signed and that other writing had been there and removed, and the present writing substituted. This was part of a full page of ball pen writing, with writing above and below the area indicated by the witness. The paper was four or five years old, of cheap woodpulp type used for printed forms, had been handled and was somewhat dirty. A brief examination disclosed the surface of the paper was completely undisturbed except for soiling due to handling and the same depth of indentations was in the writing and the same ball pen and ink was used throughout the document. The embossing on the back was uniform throughout the whole of the handwritten page. It was quite evident that the jury was correct after they examined the paper and declared that the witness was either mistaken or handled the truth carelessly.

It would take more time than I have to outline the future of document examination. Improved photographic equipment will no doubt answer some difficult problems successfully and new chemical research will assist in solving ink questions. The problem of the age of ink arises frequently. How old is this writing? Can you tell when it was written? We know that up to now no one has been able to determine the exact age of an ink writing from the ink alone. Mr. Fearon of Pittsburgh has conducted research for over twenty years and has discovered many things about inks, their differentiation and actions but so far has not been able to determine the age of ink. Of course it is sometimes possible to tell the age of a pen written document from other

circumstances, such as the paper watermark or the typewriting, if the document is typed.

Some years ago a question was asked by a lawyer—Can you tell the age of the ink? The answer was No. The document was examined from all four corners. It was a typewritten document except for signature and some writing. The document was dated 1928, the typewriter used to type the document was not manufactured until several years later, in 1934. In April 1934 the Underwood made three changes in their type and they were all in this document. Proper presentation was made of the type on 1928 and 1934 Underwoods and the typing in the document.

The question is sometimes asked—What is an expert? An expert is one having special knowledge and skill of the subject matter upon which he is called to testify. Another question is—Do people write alike? When we develop two minds alike, with the same training and experiences through life and identical physical attributes then we may find two persons who write alike. Generally speaking, some people do write much alike.

Some document examiners are like Topsy—they just growed. It has been stated that the time required in study and training to become a document examiner is equal to or exceeds that of any four year college course. It usually requires at least two years' training before one is considered competent to examine a questioned document with the various scientific aids available and arrive at a sound conclusion. This is based on the theory that the prospective examiner will have the necessary educational background and other basic requirements before he begins the training. The training would include all phases of photography and laboratory techniques, microscopy, use of test plates and various instruments, chemical processes for testing and restoring inks, study of papers, watermarks, systems of handwriting, reading of textbooks on the various subjects besides court procedures and transcripts of trials, newspaper records of cases relating to expert testimony, decisions of courts on handwriting and typewriting evidence and documents in dispute. The trainee should work with an experienced examiner before making his own decisions and attend court and listen to testimony.

An expert should aim to accumulate knowledge and experience by collecting dated specimens of typewriting, dated ink writings of all nationalities and ages of writers, visit typewriter and paper makers, collect signatures of every description from the highest to the lowest order of skill, in sickness and health, read books on the subject, etc. It is helpful to note your own writing under varying circumstances and conditions with different pens, inks and papers, listen to all classes of witnesses, read legal decisions on questioned documents, discuss expert testimony with lawyers. Your own personal experience will provide practical, valuable knowledge.

There are general qualities of a handwriting plus individual or personal. Among the distinguishing values that of skill is one of the most important identifiers. No person can write better than he knows how, a poor writer cannot execute skillful writing. A good writer can disguise his skill but usually is unsuccessful.

Make a list of some of the things to be considered in the examination of a signature or writing—skill, speed, system, slant, shading, symmetry, size, spacing, proportions, rhythm, paragraphing, margins, etc. In court it is advisable to gauge how much of this to mention in your testimony or you may be supplying vexatious material to the cross examiner.

There are some who assume that a document question is solved simply by looking at it momentarily as a paying teller looks at a cheque signature. They have no idea of the amount of work that lies behind a fully considered

opinion. I am not exaggerating when I say that hours, days, weeks and even months are employed before a solution is reached in some criminal cases where suspicion is not directed toward any particular person, such as in the Heirens kidnap-murder case, ransom note and the lipstick writing on the hotel wall. This required seven or eight months of unremitting work by the Chicago Police, Detective Bureau, State's Attorney of Cook County, the Crime Detection Laboratory and expert who examined the handwritings of hundreds of possible suspects in Chicago and other parts of the country until the actual writer was found, but as Kipling would say "That's another story".

A handwriting is identified by a combination of general and individual characteristics or habits. School children's handwriting has few characteristics so long as the model or copy book is followed. A number of students of about the same grade, under the same teacher, will write much alike. If a number of these are requested to write a line on a page with similar pen and ink, it would probably puzzle an expert to tell whether or not more than one person wrote the page for the reason that the constant striving after one ideal, the copy headlines or models, leads them away from individualities so that there is a general likeness in form and a very close likeness in the way they write.

After the students leave school and follow various occupations in different environments their handwriting will be totally different. If one is a lawyer, banker, teacher, insurance man, bookkeeper, blacksmith, farmer, labourer, through the various walks of life, the conditions of life and the manner and frequency of writing will be as varied as the individuals. By countless repetitions of the various forms and combinations of letters in each person's handwriting it may become fixed unconsciously and irrevocably and the writing is done without thought a reflex action. We depart from the conventional copy book writing so very gradually that we hardly realize it but by degrees we lop off here and add there until we have a handwriting that suits us as far as our skill will go and one that is peculiarly characteristic of us, which bears the stamp of our personality in every part of it.

When a handwriting once becomes settled and finally fixed it is impossible to throw it aside like an old coat and put on a new one at will. It is here that a person who attempts to disguise his own writing or simulate that of another meets almost insurmountable difficulties. No one knows all of the characteristics of his own writing. They have been so common, have been acquired so unconsciously that the writer himself is usually unaware of their presence. Even did the writer know his characteristics, he could not throw them off. When a person attempts to simulate the writing of another he doubles his difficulties. He imagines he knows all of the characteristics of the other hand and that he has the skill to imitate them. To simulate characteristic handwriting, full of departures from the copy book style, is far more difficult than to produce conventional or copy book writing. In simulating the writing of another your hand and mind must do two things or double duty=endeavour to avoid your own and try to copy the characteristics of another. Once our handwriting passes the formative period and becomes settled it has departed from the standard. These departures are termed characteristics and are the hall-mark of identification which trip the forger.

The Lord Chief Justice of England in the Tichborne trial said "There is nothing in which men differ more than in handwriting. The evidence of professional witnesses is a very valuable assistance in inquiries of this kind. The advantage is that habits of handwriting as shown in minute points which escape common observation but are quite observable when pointed out, are detected and disclosed by science, skill and experience. And it is so in the

comparison of handwriting by the assistance of experts. Take this into consideration with all other circumstances in the case". Some Judges could profit by the wisdom of the Lord Chief Justice.

The business of the competent and reliable handwriting expert or document examiner is the discovery and proof of the facts regarding disputed, suspected or attacked documents. This proof in most cases is against the efforts of a trained advocate and the perjury of interested, friendly or suborned witnesses. An important part of the work of the qualified specialist is not simply discovery of the facts but proof in court against mistaken or corrupt opposing witnesses and the opposing advocate who is endeavouring to prevent proof. In some ways the work of a document examiner is most exacting and like other scientific pursuits requires infinite patience, perseverance, resourcefulness and sometimes problems must be solved and preparation made to testify under pressure, in unsuitable places, with improvised methods and equipment, and insufficient time. One sometimes wonders why such an occupation is chosen by anyone as a life work. The investigation of a document is only the beginning. The most important part of our work is the appearance in court, presenting the evidence and putting it across to Judge and jury.

A handwriting expert should have a doubting mind and a large capacity for study and work. He should explore all sources for knowledge that will advance him in his chosen field. First and foremost is personal experience over many years, the study of books and writings on the subject, visits and discussions with document experts and with experts in other fields, visits to typewriter factories, manufacturers of photographic material and equipment, microscopes and cameras, ink, paper and typewriter ribbons, reading of legal decisions bearing on the subject of expert testimony and questioned documents, discussions with lawyers and if possible with Judges and experienced jurors relative to their reactions and experience with experts and expert testimony; attendance at trials and listening to all kinds of witnesses testifying; collection of dated specimens of handwriting of all ages, sexes and occupations, specimens of dated ink writing, collection of specimens of typewriting from all available machines. Any time one travels around the country and sees a typewriter, ask permission to make a specimen, date it and note the source.

The most important books are the four written by Albert S. Osborn—"Questioned Documents, First and Second Editions", "Problem of Proof", "Mind of the Juror" and "Questioned Document Problems", plus the vast number of brochures and pamphlets written by him and other authors. Do not neglect books and articles by other experts.

Catalogues of the manufacturers of microscopes, lenses, measuring instruments, etc., are a source of information and the catalogues of second-hand book dealers should be scanned for out-of-print books on handwriting, typewriting, paper, inks, printing, engraving and so on.

Albert S. Osborn used to carry with him small size slips of paper. I have seen him produce his wallet, take out a slip, make a note and put it back. He said this had been his habit for many years. When a thought occurred to him or he noted something he should remember, he wrote it down. Sometimes in the middle of the night he would wake up with a thought and as he kept pencil and pad by his bedside, he would note it down then go back to sleep. Some of these he found very helpful in problems he was studying.

You probably know that in the old days there were no laws governing handwriting standards of comparison. Just imagine the handicaps under which the early experts worked, the only standards admissible were those already in the case for some other purpose. It is a wonder they had courage enough to go into court under such conditions. Later on this was changed and hand-

writing standards were admissible if admitted by the adverse party or proved by someone who saw them written or who had seen the person write and was familiar with the writing, or proved to the satisfaction of the Court.

With the publication of Mr. Osborn's books and the use of scientific aids, the compound microscope, cameras, measuring instruments, glass measuring scales for handwriting and typewriting, improved chemical methods for testing and restoring ink writing, the occupation of a document examiner took on an entirely different value so that with a number of men in the United States and in Canada their work reached a very high standard and it was of great assistance to the courts in determining the truth or the facts of documents in dispute.

A number of these early handwriting experts published books. I have a typewritten copy of a handwritten pamphlet or small book written by N. D. Gould, handwriting expert of Cleveland, Ohio, in 1857. You will be somewhat astounded to know the extent of the knowledge and experience of Mr. Gould, his problems are duplicated in our present day work.

As a result of the labours of the pioneer handwriting experts the questioned document examiner is now recognized and accepted by the courts and his opinions when demonstrated convincingly are relied upon. Of course there are still some doubting Thomases with the old idea that it is all guess work. This is caused by these so-called expert grapho-analysts who take a four months' correspondence course in some institution down in Missouri, then they are awarded a diploma and advertise themselves as accredited handwriting experts with a degree and a diploma.

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